

# **GOWANUS CANAL Age-Dating**

<sup>210</sup>Pb, <sup>137</sup>Cs, Sedimentation Rates and Depositional Dates

Contract: 49554

Data Report Prepared March 2007

Submitted by Linda S. Bingler Marine Sciences Laboratory 1529 West Sequim Bay road Sequim, Washington 98382

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Data Report sent to Stephen Emsbo-Mattingly New Fields, Inc.

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#### **Sedimentation Rate Narrative**

Completed by Linda Bingler 1/16/07

Seven cores were collected for radionuclide analysis from the Gowanus Canal in Brooklyn, NY. The sediment cores were sectioned in the field and transferred to sampling containers. The top 150 cm of the core were sectioned into 2 cm depth intervals. Deeper sections of the sediment core were sectioned into 10 cm depth intervals. The samples were shipped via overnight courier to the Battelle Marine Science Laboratory in Sequim, WA.

Lead-210 (Pb-210) was used to calculate a site-specific sedimentation rate based on its measured activity and constant rate of decay. It forms as part of the uranium-238 decay series from radium-226 (Ra-226) in rocks and its daughter product radon-222 (Rn-222), which is a noble gas. Supported or background Pb-210 is the amount generated within the crust of the Earth. Excess Pb-210 forms from the decay of Rn-222 in the atmosphere. Pb-210 quickly precipitates out of the atmosphere, is deposited on the earth's surface, and decays with a half-life of 22.3 years. If a rate of accretion is constant, the decay process results in an exponential decrease in Pb-210 activity with depth that can be used to estimate sediment age back about 100-150 years (Donnelly and Bertness, 2001).

Approximately 30 depth intervals were analyzed for Pb-210 in each sediment core. The sedimentation and deposition rates were estimated using a modified steady-state Pb-210 dating technique (Lavelle et al., 1985; Lavelle et al., 1986; Nevissi et al., 1989). This method assumes that 1) the sedimentation rate is constant, 2) the loss of Pb-210 from sediment layers occurs only by radioactive decay, and 3) mixing is confined to the surface mixed layer. The Pb-210 activity for unmeasured depth intervals was averaged using the section activity directly above and directly below the sampling interval.

The Cs-137 data were used to independently evaluate the sedimentation rate calculated using the Pb-210 data. This technique is based on historical release of Cs-137, which is a radioactive isotope by-product of nuclear weapons testing. Measurable concentrations of this isotope first appeared in the atmosphere in about 1952, peaked during 1963-64, and declined thereafter (Juracek et al., 1998). Cs-137 maxima in sediments corresponded to approximately  $1960 \pm 5$  years. Approximately 10 depth intervals were analyzed for Cs-137 in each core.

The sedimentation rate calculated for each core was based on the Pb-210 results with two exceptions. The sedimentation rate for cores 01 and core 12 was estimated from the Cs-137 data because of anomalies in the Pb-210 profiles of these cores.

The following summary presents specific information about each sediment core.

#### Core 01

Percent dry weight varied from 47.9 to 86.1%. The supported (or background level) Pb-210 was 0.35 disintegrations per minute per gram (dpm/g) based on results from the bottom of the core. Overall the Pb-210 activity in this core was low and consistent with depth, therefore, the sedimentation rate was determined by back calculation based on the Cs-137 results. A sedimentation rate of 5.90 g/cm²/yr was obtained with an average accumulation rate of 4.92 cm/year. The sediment depth corresponding to the Cs-137 maximum (1960±5) was 260-270 cm. The Pb-210 and Cs-137 profiles agreed well in this core.

#### Core 88

Percent dry weight varied from 25.1 to 85.1%. The supported (or background level) Pb-210 was 0.49 dpm/g based on activity found in the bottom sections of the core. Overall the Pb-210 activity in this core was typical with high values in the surface sediments that decreased with depth. Using the Pb-210 results, a sedimentation rate of 2.84 g/cm²/yr was calculated with an average accumulation rate of 6.21 cm/year. The sediment depth corresponding to the Cs-137 maximum (1960±5) was 260-270 cm. The Pb-210 and Cs-137 profiles agreed well in this core.

#### Core 31

Percent dry weight varied from 31.9 to 68.6%. The supported (or background level) Pb-210 was 0.97 dpm/g based on activity found in the bottom sections of the core. Overall the Pb-210 activity in this core was variable, but generally decreasing with depth. Using the Pb-210 results, a sedimentation rate of  $3.22 \text{ g/cm}^2/\text{yr}$  was calculated with an average accumulation rate of 5.27 cm/year. The sediment depth corresponding to the Cs-137 maximum (1960±5) was 230-240 cm. The Pb-210 and Cs-137 profiles agreed well for this core.

#### Core 12

Percent dry weight varied from 25.9 to 43.4%. The supported (or background level) Pb-210 was assumed to be 0.45 dpm/g based on the Cs-137 maximum in this core. Overall the Pb-210 activity in this core was inconsistent with elevated levels below 96 cm possibly due to dredge disposal. The sedimentation rate was determined by back calculation based on the Cs-137 results. A sedimentation rate of 1.08 g/cm²/yr was obtained with an average accumulation rate of 2.46 cm/year. The sediment depth corresponding to the Cs-137 maximum (1960±5) was 108 - 110 cm. The Pb-210 and Cs-137 profiles agree well for this core.

#### Core 21

Percent dry weight varied from 44.1 to 75.2%. The supported (or background level) Pb-210 was assumed to be 0.40 dpm/g based on the similar Pb-210 pofile of Core 87. Overall the Pb-210 activity in this core showed a decreasing trend with depth, but did not appear to reach background levels by 244 cm depth. Using the Pb-210 results, a sedimentation rate of 3.08 g/cm²/yr was obtained with an average accumulation rate of 4.60 cm/year. The Cs-137 maximum was found to be section 150-160 cm. However, this Cs-137 maximum was

inconclusive, because samples directly below this section were unavailable for analysis. The 1960 depth interval based on the sedimentation rate derived from Pb-210 was estimated to be between 160 and 213 cm depth.

#### Core 60B

Percent dry weight varied from 54.0 to 80.7% indicating this core was primarily sand and gravel. The radioisotopes of interest adsorb onto organic particles, therefore, the activity of Pb-210 detected was below the effective measurement range of the instrument. Cs-137 was not measured for the same reason.

#### Core 87

Percent dry weight varied from 25.8 to 84.9%. The supported (or background level) Pb-210 was 0.40 dpm/g based on activity found in the bottom sections of the core. The Pb-210 activity in this core decreased with depth. Using the Pb-210 results, a sedimentation rate of 1.30 g/cm²/yr was obtained with an average accumulation rate of 3.01 cm/year. The sediment depth corresponding to the Cs-137 maximum (1960±5) was 108 - 122 cm. The Pb-210 and Cs-137 profiles agreed well for this core.

#### References

Donnelly, J.P. and Bertness, M.D. (2001) Rapid Shoreward Encroachment of Salt Marsh Cordgrass in Response to Accelerated Sea-level Rise. doi:10.1073/pnas.251209298.

Lavelle, J. W., Massoth, G. J., and Crecelius, E. A. (1985) Sedimentation Rates in Puget Sound from 210Pb Measurements, NOAA Technical Memorandum ERL PMEL-61.

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Juracek, K.E. and Ziegler, A.C. (1998) URL: http://ks.water.usgs.gov/Kansas/pubs/fact-sheets/fs.080-98.html.

Nevissi, A.E., Shott, G.J., Crecelius, E.A. (1989) Comparison of Two Gravity Coring Devices for Sedimentation Rate Measurement by Pb-210 Dating Techniques. Hydrobiologia. 179:261-269.

E .	sed rate			Time		SEDIM	ENT	Sediment
	Supported Pb210 (dpm/g)=	0.35	Mean	Corrected	Dry	AGE		Accumulation
		Segment	Depth	Pb 210	Weight	(years)	YEAR	Rate (cm/yr)
Sample #	Sponsor code	Depth (cm)	(cm)	(dpm/g)	Percent (%)		S = 5.90	` ,
2527-1 R2	GC-RAD-01-000-002	0-2	1	1.33	59.5	0	2005	6.30
		2-4	3	1.01	69.6	1	2004	5.72
2527-2	GC-RAD-01-004-006	4-6	5	0.698	79.7	1	2004	5.03
		6-8	7	0.780	80.1	2	2003	4.59
2527-3	GC-RAD-01-008-010	8-10	9	0.862	80.4	2	2003	4.37
		10-12	11	1.40	71.8	3	2002	4.32
2527-4	GC-RAD-01-012-014	12-14	13	1.94	63.2	3	2002	4.42
		14-16	15	1.35	70.8	3	2002	4.51
2527-5	GC-RAD-01-016-018	16-18	17	0.756	78.4	4	2001	4.48
		18-20	19	0.656	79.7	4	2001	4.40
2527-6	GC-RAD-01-020-022	20-22	21	0.555	80.9	5	2000	4.33
		22-24	23	1.20	71.6	5	2000	4.31
2527-7	GC-RAD-01-024-026	24-26	25	1.85	62.2	6	1999	4.37
		26-28	27	1.32	69.9	6	1999	4.42
2527-8	GC-RAD-01-028-030	28-30	29	0.792	77.6	7	1998	4.42
		30-32	31	2.08	64.2	7	1998	4.43
2527-9	GC-RAD-01-032-034	32-34	33	3.36	50.8	7	1998	4.52
<b></b>		34-36	35	2.15	61.6	8	1997	4.61
2527-10	GC-RAD-01-036-038	36-38	37	0.928	72.5	8	1997	4.64
		38-40	39	0.758	75.0	8	1997	4.62
2527-11	GC-RAD-01-040-042	40-42	41	0.587	77.5	9	1996	4.60
		42-44	43	0.910	71.0	9	1996	4.58
2527-12	GC-RAD-01-044-046	44-46	45	1.23	64.6	10	1995	4.60
a mam		46-48	47	0.921	71.9	10	1995	4.62
2527-13	GC-RAD-01-048-050	48-50	49	0.610	79.2	11	1994	4.60
0.505.15	66 545 64 654 654	50-54	52	1.75	65.5	11	1994	4.60
2527-15	GC-RAD-01-054-056	54-56	55	2.88	51.7	12	1993	4.66
0.505.15	GG D L D 04 060 060	56-60	58	1.71	65.9	12	1993	4.72
2527-17	GC-RAD-01-060-062	60-62	61	0.536	80.1	13	1992	4.71
2527 10	CC D L D 01 044 040	62-66	64	0.474	78.3	14	1991	4.67
2527-19	GC-RAD-01-066-068	66-68	67 <b>-</b> 3	0.412	76.4	14	1991	4.63
2527 21	CC DAD 01 050 054	68-72	70	0.515	77.9	15	1990	4.60
2527-21	GC-RAD-01-072-074	72-74	73	0.618	79.3	16	1989	4.57
2527 22	CC DAD 01 070 000	74-78	76	0.944	70.4	17	1988	4.56
2527-23	GC-RAD-01-078-080	78-80	79	1.27	61.5	17	1988	4.58
2527.25	CC DAD 01 004 006	80-84	82	1.38	56.5	18	1987	4.63
2527-25	GC-RAD-01-084-086	84-86	85	1.50	51.4	18	1987	4.69
2527-27	CC DAD 01 000 000	86-90	88	0.961	65.7	19	1986	4.72
LJL1-L1	GC-RAD-01-090-092	90-92	91	0.424	79.9	19	1986	4.72
2527-29 R2	GC-RAD-01-096-098	92-96	94	1.17	68.0	20	1985	4.72
4341-47 KL	UC-KAD-01-030-038	96-98	97	1.92	56.1	20	1985	4.74
2527-31	GC-RAD-01-102-104	98-102	100	1.53	62.5	21	1984	4.77
<u> </u>	GC-KAD-01-102-104	102-104	103	1.13	68.9	22	1983	4.79

# SEDIMENTATION RATES FOR Gowanus Canal Core 01

Core 01	sed rate			Time		SEDIMI	ENT	Sediment
	Supported Pb210 (dpm/g)=	= 0.35	Mean	Corrected	Dry	AGE		Accumulation
		Segment	Depth	Pb 210	Weight	(years)	YEAR	Rate (cm/yr)
Sample #	F Sponsor code	Depth (cm)	(cm)	(dpm/g)	Percent (%)	,	S = 5.90	(**************************************
		104-108	106	0.966	73.1	22	1983	4.78
2527-33	GC-RAD-01-108-110	108-110	109	0.799	77.2	23	1982	4.77
		110-114	112	0.940	70.3	24	1981	4.76
2527-35	GC-RAD-01-114-116	114-116	115	1.08	63.4	24	1981	4.77
		116-120	118	1.12	63.3	25	1980	4.79
2527-37	GC-RAD-01-120-122	120-122	121	1.16	63.2	25	1980	4.80
		122-126	124	1.72	57.3	26	1979	4.83
2527-39	GC-RAD-01-126-128	126-128	127	2.27	51.4	26	1979	4.87
		128-132	130	1.70	58.0	27	1978	4.90
2527-41	GC-RAD-01-132-134	132-134	133	1.12	64.6	27	1978	4.93
		134-138	136	1.40	61.3	28	1977	4.94
2527-43	GC-RAD-01-138-140	138-140	139	1.68	58.1	28	1977	4.96
		140-144	142	1.08	66.8	29	1976	4.97
2527-45	GC-RAD-01-144-146	144-146	145	0.475	75.5	29	1976	4.97
		146-150	148	1.05	62.2	30	1975	4.98
2527-440	GC-ORG-01-150-160	150-160	155	1.63	48.9	31	1974	5.05
		160-180	170	1.47	56.6	33	1972	5.20
2527-443	GC-ORG-01-180-190	180-190	185	1.31	64.4	35	1970	5.27
2527-444	GC-ORG-01-190-200	190-200	195	2.46	47.9	37	1968	5.33
		200-230	215	2.00	51.4	39	1966	5.51
2527-448	GC-ORG-01-230-240	230-240	235	1.54	54.9	42	1963	5.65
2527-449	GC-ORG-01-240-250	240-250	145	4.57	50.6	43	1962	5.71
		250-260	255	3.43	53.9	44	1961	5.77
<b>2527-45</b> 1	GC-ORG-01-260-270	260-270	165	2.28	57.2	46	1959	5.81
2527-452	GC-ORG-01-270-280	270-280	175	1.11	64.1	47	1958	5.82
		280-290	285	1.48	56.8	49	1956	5.83
2527-454	GC-ORG-01-290-300	290-300	295	1.85	49.5	50	1955	5.87
		300-310	305	1.14	50.5	51	1954	5.93
2527-456	GC-ORG-01-310-320	310-320	315	0.435	51.4	53	1952	5.98
2527-457	GC-ORG-01-320-328	320-328	324	3.99	52.7	54	1951	6.02
		328-579	454	2.07	69.4	80	1925	5.66
2527-436	GC-SED-01 (19-20)	579-610	595	0.154	86.1	111	1894	5.37

 $S = sedimentation rate in g/cm^2/year$ 

**Cs verification for Core 1:** 

BATTELLE CODE	SPONSOR CODE	Depth (cm)	Dry Wt	% Dry Wt.	Cs 137 dis/min/g (dry wt.)
	***************************************		<u> </u>	8	3
2527-15	GC-RAD-01-054-056	54-56	46.0	51.7	0.155
2527-17	GC-RAD-01-060-062	60-62	107	80.1	0.0785
2527-21	GC-RAD-01-072-074	72-74	100	79.3	0.103
2527-23	GC-RAD-01-078-080	78-80	72.0	61.5	0.139
2527-19	GC-RAD-01-078-080	78-80	103	76.4	0.0699
2527-25 R1	GC-RAD-01-084-086	84-86	44.2	51.4	0.233
2527-25 R2	GC-RAD-01-084-086	84-86	44.2	51.4	0.170
2527-27	GC-RAD-01-090-092	90-92	107	79.9	0.0925
2527-29	GC-RAD-01-096-098	96-98	43.6	56.1	0.201
2527-31	GC-RAD-01-102-104	102-104	73.4	68.9	0.103
2527-33	GC-RAD-01-108-110	108-110	100	77.2	0.164
2527-35	GC-RAD-01-114-116	114-116	47.4	63.4	0.177
2527-37	GC-RAD-01-120-122	120-122	62.3	63.2	0.195
2527-39	GC-RAD-01-126-128	126-128	41.2	51.4	0.220
2527-41	GC-RAD-01-132-134	132-134	81.0	64.6	0.0992
2527-43	GC-RAD-01-138-140	138-140	38.7	58.1	0.310
2527-45	GC-RAD-01-144-146	144-146	84.7	75.5	0.138
2527-440	GC-ORG-01-150-160	150-160	14.3	48.9	0.528
2527-443	GC-ORG-01-180-190	180-190	30.7	64.4	0.374
2527-444	GC-ORG-01-190-200	190-200	13.7	47.9	1.10
2527-448	GC-ORG-01-230-240	230-240	14.8	54.9	0.759
2527-449	GC-ORG-01-240-250	240-250	15.8	50.6	1.66
2527-451 R1	GC-ORG-01-260-270	260-270	17.6	57.2	2.41
2527-451 R2	GC-ORG-01-260-270	260-270	12.0	57.2	2.70
2527-452	GC-ORG-01-270-280	270-280	19.4	64.1	2.20
2527-454	GC-ORG-01-290-300	290-300	14.6	49.5	1.02
2527-456	GC-ORG-01-310-320	310-320	15.7	51.4	1.26
2527-457	GC-ORG-01-320-328	320-328	15.1	52.7	3.43

Note: Bold values indicate the 1960 Cs peak activity.

Core 88	sed rate		WII.U	Time		SEDIM	ENT	Sediment
	Supported Pb210 (dpm/g)=		Mean	Corrected	Dry	AGE		Accumulation
G 1 .		Segment	Depth	Pb 210	Weight	(years)	YEAR	Rate (cm/yr)
Sample #	# Sponsor code	Depth (cm)	(cm)	(dpm/g)	Percent (%)		S = 2.84	
2527-230	GC-RAD-88-004-006	0-2	1	8.48	32.0	0	2006	7.63
		2-4	3	9.15	32.9	0	2006	7.53
2527-231	GC-RAD-88-004-006	4-6	5	9.82	33.8	1	2005	7.40
		6-8	7	7.90	35.0	1	2005	7.25
2527-232	GC-RAD-88-008-010	8-10	9	5.99	36.1	1	2005	7.09
		10-12	11	7.42	34.4	2	2004	7.01
2527-233	GC-RAD-88-012-014	12-14	13	8.86	32.6	2	2004	7.03
		14-16	15	8.43	33.7	2	2004	7.06
2527-234	GC-RAD-88-016-018	16-18	17	8.00	34.8	2	2004	7.05
		18-20	19	9.33	32.2	3	2003	7.06
2527-235	GC-RAD-88-020-022	20-22	21	10.7	29.6	3	2003	7.14
		22-24	23	8.02	35.5	3	2003	7.17
2527-236	GC-RAD-88-024-026	24-26	25	5.37	41.5	4	2002	7.04
		26-28	27	5.48	37.7	4	2002	6.91
2527-237	GC-RAD-88-028-030	28-30	29	5.58	33.9	4	2002	6.89
		30-32	31	5.44	36.6	5	2001	6.87
2527-238	GC-RAD-88-032-034	32-34	33	5.29	39.2	5	2001	6.81
		34-36	35	6.79	35.2	5	2001	6.77
2527-239	GC-RAD-88-036-038	36-38	37	8.28	31.1	5	2001	6.80
		38-40	39	7.14	33.9	6	2000	6.83
2527-240	GC-RAD-88-040-042	40-42	41	6.00	36.8	6	2000	6.82
		42-44	43	6.25	36.9	6	2000	6.79
2527-241	GC-RAD-88-044-046	44-46	45	6.50	36.9	7	1999	6.77
		46-48	47	6.45	37.9	7	1999	6.74
2527-242	GC-RAD-88-048-050	48-50	49	6.40	38.8	7	1999	6.70
		50-54	51	6.30	36.0	8	1998	6.54
2527-244	GC-RAD-88-054-056	54-56	55	6.21	33.2	8	1998	6.67
		56-60	58	5.58	33.4	9	1997	6.70
2527-246	GC-RAD-88-060-062	60-62	61	4.95	33.7	9	1997	6.72
		62-66	65	4.64	36.0	10	1996	6.82
2527-248	GC-RAD-88-066-068	66-68	69	4.33	38.3	10	1996	6.90
		68-72	71	4.31	40.3	11	1995	6.74
2527-250	GC-RAD-88-072-074	72-74	73	4.29	42.2	11	1995	6.58
		74-78	76	4.49	42.0	12	1994	6.51
2527-252	GC-RAD-88-078-080	78-80	79	4.68	41.8	12	1994	6.45
		80-84	82	3.58	46.6	13	1993	6.36
2527-254	GC-RAD-88-084-086	84-86	85	2.47	51.4	14	1992	6.25
		86-90	88	3.68	48.9	14	1992	6.13
2527-256	GC-RAD-88-090-092	90-92	91	4.88	46.5	15	1992	6.04
	···	92-96	94	4.70	44.0	16	1990	5.99
2527-258	GC-RAD-88-096-098	96-98	97	4.51	41.5	16	1990	5.95
. ,		98-102	100	4.66	41.9	17	1990	5.93 5.93
2527-260	GC-RAD-88-102-104	102-104	103	4.80	42.3	17	1989	5.93 5.90

Core 88	sed rate			Time		SEDIMI	ENT	Sediment
5	Supported Pb210 (dpm/g)=	0.49	Mean	Corrected	Dry	AGE		Accumulation
		Segment	Depth	Pb 210	Weight	(years)	YEAR	Rate (cm/yr)
Sample #	Sponsor code	Depth (cm)	(cm)	(dpm/g)	Percent (%)	•	S = 2.84	• •
		104-108	105	4.94	39.6	18	1988	5.83
2527-262	GC-RAD-88-108-110	108-110	109	5.09	36.9	19	1987	5.89
		110-114	112	4.34	40.8	19	1987	5.88
2527-264	GC-RAD-88-114-116	114-116	115	3.59	44.7	20	1986	5.86
		116-120	118	4.24	41.9	20	1986	5.84
2527-266	GC-RAD-88-120-122	120-122	121	4.89	39.0	21	1985	5.82
		122-126	124	4.31	38.5	21	1985	5.83
2527-268	GC-RAD-88-126-128	126-128	127	3.73	38.1	22	1984	5.83
		128-132	130	4.28	39.8	22	1984	5.83
2527-270	GC-RAD-88-132-134	132-134	133	4.82	41.5	23	1983	5.82
		134-138	136	4.77	40.7	23	1983	5.81
2527-272	GC-RAD-88-138-140	138-140	139	4.72	39.9	24	1982	5.80
		140-144	142	4.56	40.5	25	1981	5.79
2527-274	GC-RAD-88-144-146	144-146	145	4.39	41.1	25	1981	5.79
		146-160	153	4.24	37.7	26	1980	5.80
2527-409 R2	GC-RAD-88-160-170	160-170	165	4.08	34.2	28	1978	5.84
		170-180	175	4.23	36.4	30	1976	5.88
2527-410	GC-RAD-88-180-190	180-190	185	4.37	38.6	31	1975	5.89
		190-200	195	4.20	33.3	33	1973	5.92
2527-411	GC-RAD-88-200-210	200-210	205	4.03	28.0	34	1972	5.99
		210-220	215	3.33	37.4	36	1970	6.05
2527-412	GC-RAD-88-220-230	220-230	225	2.62	46.7	38	1968	6.00
		230-240	235	2.19	48.4	40	1966	5.90
2527-413	GC-RAD-88-240-250	240-250	245	1.75	50.1	42	1964	5.80
		250-260	255	1.76	37.6	44	1962	5.75
2527-414	GC-RAD-88-260-270	260-270	265	1.77	25.1	46	1960	5.81
		270-280	275	1.06	52.4	47	1959	5.79
2527-415	GC-RAD-88-280-290	280-290	285	0.340	79.6	52	1954	5.53
		290-300	295	0.587	57.6	56	1950	5.28
2527-416	GC-RAD-88-300-310	300-310	305	0.833	35.6	58	1948	5.25
		310-320	315	0.641	56.7	60	1946	5.21
2527-417	GC-RAD-88-320-330	320-330	325	0.449	77.8	65	1941	5.03
		330-340	335	0.435	81.4	70	1936	4.78
2527-418	GC-RAD-88-320-330	340-350	345	0.420	85.1	76	1930	4.54
		350-485	417.5	0.430	81.4	118	1888	3.55
2527-438	GC-SED-88 (15.9-16.9)	485-515	500	0.249	82.4	165	1841	3.03

 $S = sedimentation rate in g/cm^2/year$ 

**Cs verification for Core 88:** 

BATTELLE CODE	SPONSOR CODE	Depth (cm)	Dry Wt	% Dry Wt.	Cs 137 dis/min/g (dry wt.)
2527-258	GC-RAD-88-096-098	96-98	46.0	41.5	0.666
2527-260	GC-RAD-88-102-104	102-104	35.3	42.3	0.754
2527-262	GC-RAD-88-108-110	108-110	30.8	36.9	1.12
2527-264	GC-RAD-88-114-116	114-116	43.9	44.7	1.10
2527-266	GC-RAD-88-120-122	120-122	29.9	39.0	0.980
2527-268	GC-RAD-88-126-128	126-128	24.3	38.1	1.17
2527-270	GC-RAD-88-132-134	132-134	22.4	41.5	1.15
2527-272	GC-RAD-88-138-140	138-140	26.6	39.9	1.26
2527-274	GC-RAD-88-144-146	144-146	19.1	41.1	1.17
2527-409	GC-RAD-88-160-170	160-170	5.89	34.2	1.57
2527-410 R1	GC-RAD-88-180-190	180-190	11.4	38.6	2.55
2527-410 R2	GC-RAD-88-180-190	180-190	11.4	38.6	2.27
2527-411	GC-RAD-88-200-210	200-210	9.37	28.0	2.11
2527-412	GC-RAD-88-220-230	220-230	12.8	46.7	2.36
2527-413	GC-RAD-88-240-250	240-250	17.4	50.1	1.86
2527-414	GC-RAD-88-260-270	260-270	10.6	25.1	3.31
2527-415	GC-RAD-88-280-290	280-290	35.0	79.6	0.303
2527-416	GC-RAD-88-300-310	300-310	7.13	35.6	0.994
2527-417	GC-RAD-88-320-330	320-330	42.4	77.8	0.125 U
2527-418	GC-RAD-88-340-350	340-350	53.1	85.1	0.0828 [
2527-438	GC-SED-88 (15.9-16.9)	485-515	58.0	82.4	0.125 U

Note: Bold values indicate the 1960 Cs peak activity.

Core 31	sed rate			Time		SEDIM	ENT	Sediment
	Supported Pb210 (dpm/g)=	: 0.97	Mean	Corrected		AGE		Accumulation
		Segment	Depth	Pb 210	% Dry	(years)	YEAR	Rate (cm/yr)
Sample #	Sponsor code	Depth (cm)	(cm)	(dpm/g)			S = 3.22	
2527-276	GC-RAD-31-004-006	0-2	1	6.46	31.9	0	2006	8.69
		2-4	3	5.49	37.8	0	2006	7.98
2527-277	GC-RAD-31-004-006	4-6	5	4.52	43.6	1	2005	7.13
		6-8	7	4.30	45.7	1	2005	6.52
2527-278	GC-RAD-31-008-010	8-10	9	4.07	47.7	1	2005	6.12
		10-12	11	4.68	46.7	2	2004	5.86
2527-279	GC-RAD-31-012-014	12-14	13	5.29	45.8	2	2004	5.73
		14-16	15	6.12	44.6	3	2003	5.67
2527-280	GC-RAD-31-016-018	16-18	17	6.94	43.5	3	2003	5.64
		18-20	19	7.20	43.1	3	2003	5.64
2527-281	GC-RAD-31-020-022	20-22	21	7.46	42.8	4	2002	5.65
		22-24	23	6.73	43.3	4	2002	5.65
2527-282	GC-RAD-31-024-026	24-26	25	5.99	43.8	4	2002	5.65
		26-28	27	6.22	43.1	5	2001	5.64
2527-283	GC-RAD-31-028-030	28-30	29	6.45	42.5	5	2001	5.65
		30-32	31	5.19	47.0	6	2000	5.63
2527-284	GC-RAD-31-032-034	32-34	33	3.92	51.4	6	2000	5.56
		34-36	35	4.38	53.6	6	2000	5.45
2527-285	GC-RAD-31-036-038	36-38	37	4.84	55.8	7	1999	5.34
		38-40	39	5.45	52.3	7	1999	5.25
2527-286	GC-RAD-31-040-042	40-42	41	6.05	48.9	8	1998	5.21
		42-44	43	4.55	52.7	8	1998	5.17
2527-287	GC-RAD-31-044-046	44-46	45	3.04	56.5	9	1997	5.10
		46-48	47	3.39	56.2	9	1997	5.02
2527-288	GC-RAD-31-048-050	48-50	49	3.74	56.0	10	1996	4.95
		50-54	51	2.72	56.6	11	1995	4.77
2527-290	GC-RAD-31-054-056	54-56	55	1.70	57.2	12	1994	4.78
		56-60	58	2.08	56.5	12	1994	4.71
2527-292	GC-RAD-31-060-062	60-62	61	2.47	55.8	13	1993	4.65
		62-66	65	2.76	49.8	14	1992	4.71
2527-294	GC-RAD-31-066-068	66-68	67	3.05	43.7	14	1992	4.64
		68-72	71	2.74	47.7	15	1991	4.73
2527-296	GC-RAD-31-072-074	72-74	73	2.43	51.6	16	1990	4.66
		74-78	76	2.35	50.6	16	1990	4.65
2527-298	GC-RAD-31-078-080	78-80	79	2.27	49.5	17	1989	4.65
		80-84	82	2.75	49.4	18	1988	4.65
2527-300	GC-RAD-31-084-086	84-86	85	3.22	49.2	18	1988	4.64
		86-90	88	2.90	50.0	19	1987	4.64
2527-302	GC-RAD-31-090-092	90-92	91	2.58	50.7	20	1986	4.64
		92-96	94	2.96	48.9	20		4.64
2527-304	GC-RAD-31-096-098	96-98	97	3.35	47.0	21		4.64
		98-102	100	4.20	42.6	21		4.66
2527-306	GC-RAD-31-102-104	102-104	103	5.05	38.1	22	1984	4.69

Core 31	sed rate		-	Time		SEDIMI	ENT	Sediment
,	Supported Pb210 (dpm/g)=		Mean	Corrected		AGE		Accumulation
		Segment	Depth	Pb 210	% Dry	(years)	YEAR	
Sample #	Sponsor code	Depth (cm)	(cm)	(dpm/g)	·	•	S = 3.22	( · · · · · · · · · · · · · · · · · · ·
		104-108	105	4.92	37.2	22	1984	4.69
2527-308	GC-RAD-31-108-110	108-110	109	4.78	36.3	23	1983	4.78
		110-114	112	4.68	36.3	23	1983	4.82
2527-310	GC-RAD-31-114-116	114-116	115	4.57	36.3	24	1982	4.87
		116-120	118	4.54	36.6	24	1982	4.91
2527-312	GC-RAD-31-120-122	120-122	121	4.51	36.9	24	1982	4.95
		122-126	124	4.65	35.7	25	1981	4.99
2527-314	GC-RAD-31-126-128	126-128	127	4.78	34.5	25	1981	5.03
		128-132	130	4.61	34.7	26	1980	5.07
2527-316	GC-RAD-31-132-134	132-134	133	4.44	35.0	26	1980	5.11
		134-138	136	4.17	34.9	26	1980	5.14
2527-318	GC-RAD-31-138-140	138-140	139	3.89	34.8	27	1979	5.18
		140-144	142	4.40	33.6	27	1979	5.22
2527-320	GC-RAD-31-144-146	144-146	145	4.90	32.4	28	1978	5.26
		146-150	148	5.41	35.1	28	1978	5.30
2527-426	GC-RAD-31-150-160	150-160	155	5.93	37.9	29	1977	5.36
		160-170	165	6.14	40.6	30	1976	5.41
2527-427	GC-RAD-31-170-180	170-180	175	6.36	43.4	32	1974	5.44
		180-190	185	5.38	43.6	34	1972	5.45
2527-428	GC-RAD-31-190-200	190-200	195	4.40	43.8	36	1970	5.45
		200-210	205	4.19	47.2	38	1968	5.44
2527-429	GC-RAD-31-210-220	210-220	215	3.99	50.6	40	1966	5.40
		220-230	225	4.48	45.7	42	1964	5.37
2527-430	GC-RAD-31-230-240	230-240	235	4.98	40.8	44	1962	5.38
		240-250	245	4.68	43.1	45	1961	5.40
2527-431	GC-RAD-31-250-260	250-260	255	4.38	45.4	47	1959	5.40
		260-270	265	3.53	49.1	49	1957	5.38
2527-432	GC-RAD-31-270-280	270-280	275	2.68	52.8	52	1954	5.34
		280-290	285	1.97	56.1	54	1952	5.27
2527-433	GC-RAD-31-290-300	290-300	295	1.27	59.5	57	1949	5.19
		300-310	305	1.13	56.0	60	1946	5.12
2527-434	GC-RAD-31-310-320	310-320	315	1.00	52.6	62	1944	5.07
		320-330	325	1.02	60.6	65	1941	5.02
2527-435	GC-RAD-31-330-340	330-340	335	1.05	68.6	68	1938	4.92

S = sedimentation rate in g/cm<sup>2</sup>/year

**Cs verification for Core 31:** 

BATTELLE CODE	SPONSOR CODE	Depth (cm)	Dry Wt	% Dry Wt.	Cs 137 dis/min/g (dry wt.)
		***************************************			<u> </u>
2527-304	GC-RAD-31-096-098	96-98	33.5	47.0	1.01
2527-306	GC-RAD-31-102-104	102-104	22.1	38.1	1.10
2527-308	GC-RAD-31-108-110	108-110	23.00	36.3	1.28
2527-310	GC-RAD-31-114-116	114-116	19.9	36.3	1.45
2527-312	GC-RAD-31-120-122	120-122	29.9	36.9	0.957
2527-314	GC-RAD-31-126-128	126-128	20.4	34.5	1.41
2527-316	GC-RAD-31-132-134	132-134	24.39	35.0	1.17
2527-318	GC-RAD-31-138-140	138-140	14.79	34.8	1.41
2527-320	GC-RAD-31-144-146	144-146	19.1	32.4	1.44
2527-426 R1	GC-RAD-31-150-160	150-160	13.5	37.9	0.548
2527-426 R2	GC-RAD-31-150-160	150-160	13.5	37.9	0.350
2527-427	GC-RAD-31-170-180	170-180	25.5	43.4	0.661
2527-428	GC-RAD-31-190-200	190-200	15.9	43.8	1.73
2527-429	GC-RAD-31-210-220	210-220	15.2	50.6	1.39
2527-430	GC-RAD-31-230-240	230-240	5.05	40.8	2.29
2527-431	GC-RAD-31-250-260	250-260	4.57	45.4	1.85
2527-432	GC-RAD-31-270-280	270-280	11.7	52.8	1.41
2527-433	GC-RAD-31-290-300	290-300	17.2	59.5	0.454
2527-434	GC-RAD-31-310-320	310-320	11.1	52.6	0.274
2527-435	GC-RAD-31-330-340	330-340	23.8	68.6	0.324

Note: Bold values indicate the 1960 Cs peak activity.

Core 12	sed rate			Time		SEDIMI	ENT	Sediment
	Supported Pb210 (dpm/g)=		Mean	Corrected		AGE		Accumulation
		Segment	Depth	Pb 210	% Dry	(years)	YEAR	
Sample #	Sponsor code	Depth (cm)	(cm)	(dpm/g)	·		S = 1.08	` ' '
2527-46	GC-RAD-12-000-002	0-2	1	4.96	35.1	0	2006	2.55
		2-4	3	5.01	35.9	1	2005	2.52
2527-47	GC-RAD-12-004-006	4-6	5	5.07	36.8	2	2004	2.48
		6-8	7	5.21	34.9	3	2003	2.48
2527-48	GC-RAD-12-008-010	8-10	9	5.34	33.0	4	2002	2.52
		10-12	11	5.80	35.6	4	2002	2.54
2527-49	GC-RAD-12-012-014	12-14	13	6.26	38.2	5	2001	2.52
		14-16	15	4.68	38.5	6	2000	2.48
2527-50	GC-RAD-12-016-018	16-18	17	3.10	38.9	7	1999	2.44
		18-20	19	4.02	35.0	8	1998	2.44
2527-51	GC-RAD-12-020-022	20-22	21	4.94	31.1	9	1997	2.46
		22-24	23	5.46	30.9	9	1997	2.50
2527-52	GC-RAD-12-024-026	24-26	25	5.98	30.8	10	1996	2.54
		26-28	27	6.59	31.9	11	1995	2.57
2527-53	GC-RAD-12-028-030	28-30	29	7.20	33.1	11	1995	2.59
		30-32	31	6.86	35.4	12	1994	2.59
2527-54	GC-RAD-12-032-034	32-34	33	6.52	37.7	13	1993	2.58
		34-36	35	7.06	37.3	14	1992	2.56
2527-55	GC-RAD-12-036-038	36-38	37	7.59	36.9	15	1991	2.55
		38-40	39	7.44	36.3	15	1991	2.54
2527-56	GC-RAD-12-040-042	40-42	41	7.28	35.8	16	1990	2.54
		42-44	43	6.78	39.6	17	1989	2.53
2527-57	GC-RAD-12-044-046	44-46	45	6.28	43.4	18	1988	2.50
		46-48	47	6.74	41.6	19	1987	2.47
2527-58	GC-RAD-12-048-050	48-50	49	7.21	39.8	20	1986	2.45
		50-54	52	7.17	37.8	21	1985	2.43
2527-60	GC-RAD-12-054-056	54-56	55	7.13	35.8	23	1983	2.43
		56-60	58	6.66	36.5	24	1982	2.43
2527-62	GC-RAD-12-060-062	60-62	61	6.18	37.2	25	1981	2.43
		62-66	64	5.98	38.2	26	1980	2.42
2527-64	GC-RAD-12-066-068	66-68	67	5.78	39.3	28	1978	2.41
		68-72	71	5.59	38.5	29	1977	2.44
2527-66	GC-RAD-12-072-074	72-74	73	5.41	37.7	30	1976	2.40
		74-78	76	6.81	38.5	32	1974	2.39
2527-68	GC-RAD-12-078-080	78-80	79	8.22	39.3	33	1973	2.39
		80-84	82	7.43	38.8	35	1973	2.38
2527-70	GC-RAD-12-084-086	84-86	85	6.63	38.2	36	1971	2.36
		86-90	88	4.18	40.5	37	1969	2.36
2527-72	GC-RAD-12-090-092	90-92	91	1.73	42.9	39	1967	2.35
		92-96	94	8.39	38.8	40	1967	The state of the s
2527-74	GC-RAD-12-096-098	96-98	97	15.1	34.7	40	1965	2.34
	. 12 0,0 0,0	98-102	100	13.7	33.9	43	1963	2.34
2527-76	GC-RAD-12-102-104							2.35
2527-76	GC-RAD-12-102-104	102-104	103	12.4	33.9	43	1963	2.35 2.36

## SEDIMENTATION RATES FOR Gowanus Canal Core 12

Core 12	sed rate			Time		SEDIMEN	ľΤ	Sediment
S	upported Pb210 (dpm/g)=	: 0.45	Mean	Corrected		AGE		Accumulation
		Segment	Depth	Pb 210	% Dry	(years)	YEAR	Rate (cm/yr)
Sample #	Sponsor code	Depth (cm)	(cm)	(dpm/g)	•	S	= 1.08	
		104-108	106	10.3	29.5	45	1961	2.37
2527-78	GC-RAD-12-108-110	108-110	109	8.21	25.9	46	1960	2.39
		110-114	112	11.7	29.4	46	1960	2.41
2527-80	GC-RAD-12-114-116	114-116	115	15.1	33.0	47	1959	2.43
		116-120	118	15.2	32.1	48	1958	2.44
2527-82	GC-RAD-12-120-122	120-122	121	15.3	31.3	49	1957	2.45
		122-126	124	14.8	32.6	51	1955	2.45
2527-84	GC-RAD-12-126-128	126-128	127	14.2	33.8	52	1954	2.46
		128-132	130	15.2	33.8	53	1953	2.47
2527-86	GC-RAD-12-132-134	132-134	133	16.2	33.8	54	1952	2.47
		134-138	136	13.9	34.0	55	1951	2.47
2527-88	GC-RAD-12-138-140	138-140	139	11.7	34.2	56	1950	2.48
		140-144	142	13.4	33.3	57	1949	2.48
2527-90	GC-RAD-12-144-146	144-146	145	15.2	32.3	58	1948	2.49

S = sedimentation rate in g/cm<sup>2</sup>/year

## **Cs verification for Core 12:**

BATTELLE CODE	SPONSOR CODE	Depth (cm)	Dry Wt	% Dry Wt.	Cs 137 dis/min/g (dry wt.)
2527.56	CC D A D 10 040 040	10. 10	26.7	25.0	
2527-56	GC-RAD-12-040-042	40-42	26.5	35.8	0.377
2527-57	GC-RAD-12-044-046	44-46	35.6	43.4	0.614
2527-58	GC-RAD-12-048-050	48-50	31.7	39.8	0.604
2527-60	GC-RAD-12-054-056	54-56	25.3	35.8	0.722
2527-62	GC-RAD-12-060-062	60-62	37.5	37.2	0.483
2527-64	GC-RAD-12-066-068	66-68	40.6	39.3	0.568
2527-66	GC-RAD-12-072-074	72-74	35.1	37.7	0.331
2527-68	GC-RAD-12-078-080	78-80	37.7	39.3	0.467
2527-70	GC-RAD-12-084-086	84-86	28.2	38.2	0.521
2527-72	GC-RAD-12-090-092	90-92	31.0	42.9	0.418
2527-74	GC-RAD-12-096-098	96-98	21.4	34.7	0.620
2527-76	GC-RAD-12-102-104	102-104	23.4	33.0	0.797
2527-78	GC-RAD-12-108-110	108-110	3.39	25.9	1.40
2527-80	GC-RAD-12-114-116	114-116	24.9	33.0	0.483
2527-82	GC-RAD-12-120-122	120-122	21.7	31.3	0.630

Note: Bold values indicate the 1960 Cs peak activity.

Core 21	sed rate			Time		SEDIMI	ENT	Sediment
	Supported Pb210 (dpm/g)=		Mean	Corrected		AGE		Accumulation
_		Segment	Depth	Pb 210	% Dry	(years)	YEAR	Rate (cm/yr)
Sample #	f Sponsor code	Depth (cm)	(cm)	(dpm/g)			S = 3.08	
2527-92	GC-RAD-21-000-002	0-2	1	6.18	44.1	0	2006	5.23
		2-4	3	6.52	45.0	1	2005	5.18
2527-93	GC-RAD-21-004-006	4-6	5	6.87	46.0	1	2005	5.10
		6-8	7	6.92	47.2	1	2005	5.02
2527-94	GC-RAD-21-008-010	8-10	9	6.97	48.5	2	2004	4.93
		10-12	11	6.79	47.3	2	2004	4.87
2527-95	GC-RAD-21-012-014	12-14	13	6.61	46.0	3	2003	4.86
		14-16	15	6.57	47.1	3	2003	4.86
2527-96	GC-RAD-21-016-018	16-18	17	6.53	48.1	4	2002	4.83
		18-20	19	6.11	48.4	4	2002	4.80
2527-97	GC-RAD-21-020-022	20-22	21	5.70	48.7	4	2002	4.78
		22-24	23	5.44	48.2	5	2001	4.75
2527-98	GC-RAD-21-024-026	24-26	25	5.17	47.7	5	2001	4.74
		26-28	27	4.49	47.2	6	2000	4.74
2527-99	GC-RAD-21-028-030	28-30	29	3.82	46.6	6	2000	4.74
		30-32	31	3.91	47.7	7	1999	4.74
2527-100	GC-RAD-21-032-034	32-34	33	3.99	48.8	7	1999	4.73
		34-36	35	4.72	48.5	7	1999	4.72
2527-101	GC-RAD-21-036-038	36-38	37	5.45	48.3	8	1998	4.71
		38-44	39	5.17	47.1	8	1998	4.70
2527-103	GC-RAD-21-044-046	44-46	45	4.90	45.9	9	1997	4.94
		46-54	50	4.39	47.1	11	1995	4.73
2527-106	GC-RAD-21-054-056	54-56	55	3.88	48.2	12	1994	4.73
		56-60	58	3.84	51.5	12	1994	4.71
2527-108	GC-RAD-21-060-062	60-62	61	3.79	54.8	13	1993	4.67
		62-66	64	4.00	53.1	14	1992	4.62
2527-110	GC-RAD-21-066-068	66-68	67	4.21	51.5	15	1991	4.59
		68-72	70	4.62	50.9	15	1991	4.57
2527-112	GC-RAD-21-072-074	72-74	73	5.02	50.4	16	1990	4.56
		74-78	76	4.12	53.1	17	1989	4.53
2527-114	GC-RAD-21-078-080	78-80	79	3.22	55.9	18	1988	4.50
		80-84	82	2.85	53.0	18	1988	4.47
2527-116	GC-RAD-21-084-086	84-86	85	2.47	50.2	19	1987	4.46
		86-90	88	4.17	50.3	20	1986	4.45
2527-118	GC-RAD-21-090-092	90-92	91	5.87	50.5	20	1986	4.45
		92-96	94	5.32	50.7	21	1985	4.44
2527-120	GC-RAD-21-096-098	96-98	97	4.77	50.7	22	1983	4.43
	21 07 0 070	98-102	100	4.87	49.8	23	1983	4.43
2527-122	GC-RAD-21-102-104	102-104	103	4.97	48.7	23	1983	4.43
	102 101	104-120	112	4.74	48.9	25 25	1983	4.43
2527-128	GC-RAD-21-120-122	120-122	121	4.74	49.1	23 27	1981	4.43 4.44
: _ <b></b>		122-132	127	4.16	51.2	29	1979	4.44
2527-132	GC-RAD-21-132-134	132-134	133	3.80	53.3	30	1977	4.43 4.41

## SEDIMENTATION RATES FOR Gowanus Canal Core 21

Core 21	sed rate			Time		SEDIMEN	VΓ	Sediment
	Supported Pb210 (dpm/g)=	= 0.40	Mean	Corrected		AGE		Accumulation
		Segment	Depth	Pb 210	% Dry	(years)	YEAR	Rate (cm/yr)
Sample #	Sponsor code	Depth (cm)	(cm)	(dpm/g)	Ť	S	5 = 3.08	` •
	73774000	134-138	136	4.08	58.9	31	1975	4.39
2527-134	GC-RAD-21-138-140	138-140	139	4.36	64.5	32	1974	4.35
		140-144	142	4.28	59.6	33	1973	4.31
2527-136	GC-RAD-21-144-146	144-146	145	4.19	54.7	34	1972	4.29
		146-150	148	3.92	51.7	35	1971	4.29
2527-458	GC-ORG-21-150-160	150-160	155	3.64	48.6	36	1970	4.29
		160-213	187	2.19	61.9	46	1960	4.07
2527-437	GC-SED-21B (7-8)	213-244	229	0.735	75.2	61	1945	3.72

S = sedimentation rate in g/cm<sup>2</sup>/year

#### **Cs verification for Core 21:**

BATTELLE CODE	SPONSOR CODE	Depth (cm)	Dry Wt	% Dry Wt.	Cs 137 dis/min/g (dry wt.)
2527-122	GC-RAD-21-102-104	102-104	44.0	48.7	0.704
2527-124	GC-RAD-21-102-104 GC-RAD-21-108-110	102-104	44.0 46.7	46.7 49.1	0.704
2527-128	GC-RAD-21-120-122	120-122	46.7	49.1	0.889
2527-132	GC-RAD-21-132-134	132-134	48.4	53.3	0.898
2527-134	GC-RAD-21-138-140	138-140	45.0	64.5	1.01
2527-136	GC-RAD-21-144-146	144-146	59.9	54.7	0.669
2527-458	GC-ORG-21-150-160	150-160	16.5	48.6	1.39
2527-437	GC-SED-21B (7-8)	213-244	30.0	75.2	0.577

Note: Bold values indicate the 1960 Cs peak activity.

Core 87	sed rate	0.40	N /	Time		SEDIMEN	T	Sediment
	Supported Pb210 (dpm/g)=		Mean	Corrected	of D	AGE	VEAD	Accumulation
Sample #	Sponsor code	Segment Depth (cm)	Depth (cm)	Pb 210	% Dry	(years)	= 1.30	Rate (cm/yr)
Sample #	Sponsor code	Depui (cm)	(CIII)	(dpm/g)		S	= 1.30	
2527-138	GC-RAD-87-000-002	0-2	1	9.35	27.4	0	2006	4.32
		2-4	3	8.67	28.9	1	2005	4.22
2527-139	GC-RAD-87-004-006	4-6	5	7.99	30.4	1	2005	4.08
		6-8	7	10.8	28.1	2	2004	4.04
2527-140	GC-RAD-87-008-010	8-10	9	13.6	25.8	2	2004	4.12
		10-12	11	10.3	26.7	3	2003	4.20
2527-141	GC-RAD-87-012-014	12-14	13	6.96	27.5	3	2003	4.23
		14-16	15	7.14	29.9	4	2002	4.21
2527-142	GC-RAD-87-016-018	16-18	17	7.31	32.4	4	2002	4.13
		18-20	19	7.15	31.3	5	2001	4.06
2527-143	GC-RAD-87-020-022	20-22	21	6.98	30.3	5	2001	4.02
		22-24	23	6.54	34.1	6	2000	3.96
2527-144	GC-RAD-87-024-026	24-26	25	6.09	37.9	6	2000	3.86
		26-28	27	7.00	37.1	7	1999	3.75
2527-145	GC-RAD-87-028-030	28-30	29	7.91	36.3	8	1998	3.68
		30-32	31	6.63	38.4	9	1997	3.61
2527-146	GC-RAD-87-032-034	32-34	33	5.34	40.5	9	1997	3.52
		34-36	35	5.04	40.8	10	1996	3.44
2527-147	GC-RAD-87-036-038	36-38	37	4.74	41.0	11	1995	3.37
		38-40	39	4.75	39.4	12	1994	3.31
2527-148	GC-RAD-87-040-042	40-42	41	4.76	37.9	13	1993	3.28
		42-44	43	4.54	36.2	13	1993	3.25
2527-149	GC-RAD-87-044-046	44-46	45	4.32	34.5	14	1992	3.24
		46-48	47	4.11	37.2	15	1991	3.23
2527-150	GC-RAD-87-048-050	48-50	49	3.89	39.9	15	1991	3.21
		50-54	51	4.10	40.6	16	1990	3.16
2527-152	GC-RAD-87-054-056	54-56	55	4.30	41.4	18	1988	3.11
		56-60	58	3.51	41.8	19	1987	3.06
2527-154	GC-RAD-87-060-062	60-62	61	2.72	42.1	20	1986	3.02
		62-66	65	2.72	42.4	21	1985	2.98
2527-156	GC-RAD-87-066-068	66-68	67	2.72	42.7	23	1983	2.94
		68-72	71	2.66	43.2	24	1982	2.91
2527-158	GC-RAD-87-072-074	72-74	73	2.59	43.6	25	1981	2.88
		74-78	76	2.50	43.6	27	1979	2.85
2527-160	GC-RAD-87-078-080	78-80	79	2.41	43.5	28	1978	2.82
		80-84	82	2.40	43.8	29	1977	2.79
2527-162	GC-RAD-87-084-086	84-86	85	2.39	44.1	31	1975	2.77
		86-90	88	2.29	44.5	32	1974	2.74
2527-164	GC-RAD-87-090-092	90-92	91	2.19	44.9	33	1973	2.72
		92-96	94	2.06	44.7	35	1971	2.70
2527-166	GC-RAD-87-096-098	96-98	97	1.94	44.5	36	1970	2.68
		98-102	100	2.29	43.4	37	1969	2.67
2527-168	GC-RAD-87-102-104	102-104	103	2.64	42.4	38	1968	2.68

## SEDIMENTATION RATES FOR Gowanus Canal Core 87

10/26/06

Core 87	sed rate			Time		SEDIME	ENT	Sediment
	Supported Pb210 (dpm/g)=	= 0.40	Mean	Corrected		AGE		Accumulation
		Segment	Depth	Pb 210	% Dry	(years)	YEAR	Rate (cm/yr)
Sample #	Sponsor code	Depth (cm)	(cm)	(dpm/g)		-	S = 1.30	-
		104-108	105	2.89	42.5	40	1966	2.64
2527-170	GC-RAD-87-108-110	108-110	109	3.13	42.7	41	1965	2.63
		110-114	112	3.59	44.0	43	1963	2.62
2527-172	GC-RAD-87-114-116	114-116	115	4.04	45.3	44	1962	2.61
		116-120	118	3.48	45.2	46	1960	2.59
2527-174	GC-RAD-87-120-122	120-122	121	2.92	45.0	47	1959	2.58
		122-126	124	2.72	45.9	48	1958	2.56
2527-176	GC-RAD-87-126-128	126-128	127	2.51	46.7	50	1956	2.55
		128-132	130	2.48	46.2	51	1955	2.54
2527-178	GC-RAD-87-132-134	132-134	133	2.44	45.8	53	1953	2.52
		134-138	136	2.61	45.6	54	1952	2.51
2527-180	GC-RAD-87-138-140	138-140	139	2.78	45.4	56	1950	2.50
		140-144	142	2.69	45.5	57	1949	2.49
2527-182	GC-RAD-87-144-146	144-146	145	2.59	45.7	58	1948	2.48
		146-160	153	2,25	40.6	62	1944	2.48
2527-419	GC-RAD-87-160-170	160-170	165	1.90	35.5	66	1940	2.49
		170-180	175	1.78	32.7	69	1937	2.53
2527-420	GC-RAD-87-180-190	180-190	185	1.66	29.8	72	1934	2.57
		190-200	195	1.26	37.8	75	1931	2.60
2527-421	GC-RAD-87-200-210	200-210	205	0.865	45.8	79	1927	2.58
		210-220	215	0.691	65.3	86	1920	2.50
2527-422	GC-RAD-87-220-230	220-230	225	0.516	84.9	97	1909	2.32
		230-240	235	0.693	74.7	109	1897	2.16
2527-423	GC-RAD-87-240-250	240-250	245	0.869	64.5	118	1888	2.07
		250-260	255	0.624	70.7	127	1879	2.00
2527-424	GC-RAD-87-260-270	260-270	265	0.379	76.9	138	1868	1.93
		270-280	275	0.401	77.4	149	1857	1.85
2527-425	GC-RAD-87-280-290	280-290	285	0.422	77.9	160	1846	1.78

S = sedimentation rate in g/cm<sup>2</sup>/year

# **Cs verification for Core 87:**

BATTELLE	SPONSOR	Depth	Dry W	t % Dry Wt.	Cs 137 dis/min/g	
CODE	CODE	(cm)	(g)	(g)	(dry wt.)	
2527-156	GC-RAD-87-066-068	66-68	30.7	42.7	1.68	
2527-158	GC-RAD-87-072-074	72-74	24.4	43.6	0.732	
2527-160	GC-RAD-87-078-080	78-80	40.5	56.5	0.768	
2527-162	GC-RAD-87-084-086	84-86	32.7	44.1	1.09	
2527-164	GC-RAD-87-090-092	90-92	32.6	44.9	0.690	
2527-166	GC-RAD-87-096-098	96-98	25.2	44.5	0.646	
2527-168	GC-RAD-87-102-104	102-104	30.9	42.4	0.696	
2527-170	GC-RAD-87-108-110	108-110	33.0	42.7	1.12	
2527-172 R1	GC-RAD-87-114-116	114-116	38.8	45.3	0.907	
2527-172 R2	GC-RAD-87-114-116	114-116	38.8	45.3	0.960	
2527-174	GC-RAD-87-120-122	120-122	33.6	45.0	1.15	
2527-176	GC-RAD-87-126-128	126-128	41.3	46.7	0.715	
2527-178	GC-RAD-87-132-134	132-134	34.4	45.8	0.641	
2527-180	GC-RAD-87-138-140	138-140	30.4	45.4	0.614	
2527-182	GC-RAD-87-144-146	144-146	35.5	45.7	0.779	
2527-419	GC-RAD-87-160-170	160-170	17.2	35.5	0.280	U
2527-420	GC-RAD-87-180-190	180-190	14.5	29.8	0.482	U
2527-421	GC-RAD-87-200-210	200-210	22.4	45.8	0.229	U
2527-422	GC-RAD-87-220-230	220-230	58.5	84.9	0.121	U
2527-423	GC-RAD-87-240-250	240-250	34.7	64.5	0.163	U

Radiogenic Core	Near	Chemi Depth	Chemistry Sample Depth Interval (ft)	e		BAP Con	BAP Conc (mg/kg)	Depositional	ional
		Top - ft.	Top - cm ]	Top - cm Bottom - ft.	Bottom - cm	STL	NF		
<b>}4</b>	Top of Canal	<b></b>	30.5	2.5	76.2	1.5			1998-1989
		16	488	17	518	39			1925 Complete
		19	579	20	610	87J	7	70	1894
88	6th Street Basin	0.5	15.2		30.5	34			2004-2002
		9.9	302	10.4	317	47J			1948-1946   Complete
		15.9	485	16.9	515	25J		62	1841
31	Citizens	2.5	76.2	4.5	137	20		18	18 1990-1980
		11.5	351	12.5	381	380J			1923   Complete
		16.5	503	18	549	38J			
12	Fulton	0	0	2	61.0	13			2006-1982 Complete
		13	396	14	427	43		22	1826
60D	Metropolitan	0	0	2.5	76.2	140			NA Sed rates not calculable
		6.8	207	8	244	160J		140	NA
		13.8	421	14.4	439	< 0.039			NA
21	Between Citizens	1.5	45.7	သ	91.4	35			1997-1986 Complete
	and Fulton	7	213	8	244	12		16	1945
Alternatives							1		
87	4th Street Basin	4.4	134	6.2	189	40J		4	44   1952-1934   Complete
		12.7	387	13.3	405	21			
	THE PARTY OF THE P	19	579	20	610	<0.078			1829
78	Home Depot	0	0	<del></del>	30.5	5.3	i		NA Not needed
		2.5	76.2	5	152	14J		11	11 NA

#### **QA/QC NARRATIVE**

PROJECT: PARAMETER

PARAMETER: LABORATORY:

MATRIX:

GEI Cores 01, 88, 31, 12, 21, 60B, and 87

Radionuclide Analysis: 210 Pb

Battelle Marine Sciences Laboratory, Sequim, Washington

Sediment

Includes samples 2527\*1-13, 15,17,19,21,23,25,27,29,31,33,35,37,39,41,43, 45,440,443,444,448,449,451,452,454,456,457,436,230-242,244,246,248,250, 252,254,256,258,260,262,264, 266,268,270,272,274,409-418,438,276-288, 290,292,294,296,298,300,302,304, 306,308,310,312,314,316,318,320,426-435,46-60,62,64,66,68,70,72,74,76, 78,80,82,84,86,88,90,92-104,106,108,110, 112,114,116,118,120,122,124,126, 128,130,132,134,136,458,437,368-380,382, 384,386,388,390,392,394,396,398, 400,402,404,406,408,138-150,152,154,156,

158,160,162,164,166,168,170,172, 174,176,178,180,182,419-425

SAMPLE CUSTODY AND PROCESSING:

Two hundred forty three sediment samples were freeze-dried, digested and

counted by alpha spectroscopy for <sup>210</sup>Pb.

DATA QUALITY OBJECTIVES:

<sup>210</sup>Pb Check Standard Accuracy:

≤ 30% PD

Replicate Precision (Duplicate):

≤ 30% RPD

METHOD:

Analysis of sediment samples for <sup>210</sup>Pb was conducted according to Battelle SOP MSL-C-012, <sup>210</sup>Pb Dating Digestion and Analysis. An approximate 3-g aliquot of each dry sediment sample was removed for acid digestion and plated onto a small metal disk. Polonium-208 is added to each sample during processing as an internal standard. The disks are counted individually using a Tennelec TC 256 Si (Li) alpha particle spectrometer, Model 7401. Samples were counted for approximately 24 hours each. After counting and calculations, sample results are reported as <sup>210</sup>Pb activity in units of disintegrations per

minute per gram.

CHECK STANDARD ACCURACY:

A minimum of one <sup>210</sup>Pb check standard was analyzed with each batch of 33 samples or less. The results of the check standard analyses were 16, 4, 3 (core 01), 6, 28, 8, 3 (core 88), 9, 31, 4, (core 31), 31, 6 (core 12), 6, 28, 3 (core 21), 25, 3 (core 60B), 19, 8, and 14 (core 87) percent difference (PD) and were within the QC acceptance criteria of 30% PD, except one check sample for core 31 and 12. Samples analyzed with that check sample were flagged as estimates with a "#". Other QC analyzed with those samples were within acceptable criteria, therefore, no further corrective action was taken.

REPLICATE PRECISION:

A minimum of one sample was analyzed in duplicate with each batch of 33 samples or less. Precision of duplicate analysis, expressed as the relative percent difference (RPD) of replicate results, were 17, 17, (core 01), 11, 10, 3, 8 (core 88), 0, 18, 10 (core 31), 9, 9, (core 12), 21, 6 (core 21), 24 (core 60B), 8, and 3% (core 87) and were within the QC acceptance criteria of 30% RPD.

1529 West Sequim Bay Rd. Sequim, WA 98382 (360) 683-4151

# **Gowanus Canal Core 1** Pb-210 RESULTS IN SEDIMENT sults in disintegrations/minute/gram (dpm/g)

(360) 683-4151	Results	in disintegi		nute/gram (dpm/g		Project 2	527
			Mean		ACTIVITY		1
BATTELLE	SPONSOR	Depth	Depth	Percent Dry	Pb210	RPD	
CODE	ID	(cm)	cm	Weight (g)	dpm/g	(%)	_
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	5.65	16%	*
2527-1 R1	GC-RAD-01-000-002	0-2	1	59.5	1.44	1070	
2527-1 R2	GC-RAD-01-000-002	0-2	1	59.5	1.21	17%	@
2527-2	GC-RAD-01-004-006	4-6	5	79.7	0.698	1770	
2527-3	GC-RAD-01-008-010	8-10	9	80.4	0.862		
2527-4	GC-RAD-01-012-014	12-14	13	63.2	1.94		
2527-5	GC-RAD-01-016-018	16-18	17	78.4	0.756		
2527-6	GC-RAD-01-020-022	20-22	21	80.9	0.555		
2527-7	GC-RAD-01-024-026	24-26	25	62.2	1.85		
2527-8	GC-RAD-01-028-030	28-30	29	77.6	0.792		
2527-9	GC-RAD-01-032-034	32-34	33	50.8	3.36		
2527-10	GC-RAD-01-036-038	36-38	37	72.5	0.928		
2527-11	GC-RAD-01-040-042	40-42	41	77.5	0.587		
2527-12	GC-RAD-01-044-046	44-46	45	64.6	1.23		
2527-13	GC-RAD-01-048-050	48-50	49	79.2	0.610		
2527-15	GC-RAD-01-054-056	54-56	55	51.7	2.88		
2527-17	GC-RAD-01-060-062	60-62	61	80.1	0.536		
2527-19	GC-RAD-01-066-068	66-68	67	76.4	0.412		
2527-21	GC-RAD-01-072-074	72-74	73	79.3	0.628		
2527-23	GC-RAD-01-078-080	78-80	79	61.5	1.27		
2527-25	GC-RAD-01-084-086	84-86	85	51.4	1.50		
2527-27	GC-RAD-01-090-092	90-92	91	79.9	0.424		
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	6.44	4%	*
2527-29 R1	GC-RAD-01-096-098	96-98	97	56.1	2.08		
2527-29 R2	GC-RAD-01-096-098	96-98	97	56.1	1.76	17%	@
2527-31	GC-RAD-01-102-104	102-104	103	68.9	1.13		
2527-33	GC-RAD-01-108-110	108-110	109	77.2	0.799		
2527-35	GC-RAD-01-114-116	114-116	115	63.4	1.08		
2527-37	GC-RAD-01-120-122	120-122	121	63.2	1.16		
2527-39	GC-RAD-01-126-128		127	51.4	2.27		
2527-41	GC-RAD-01-132-134	132-134	133	64.6	1.12		l
2527-43	GC-RAD-01-138-140	138-140	139	58.1	1.68		
2527-45	GC-RAD-01-144-146	144-146	145	75.5	0.475		
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	6.90	3%	*
2527-440	GC-ORG-01-150-160	150-160	155	48.9	1.63		
2527-443	GC-ORG-01-180-190	180-190	185	64.4	1.31		
2527-444	GC-ORG-01-190-200	190-200	195	47.9	2.46		
2527-448	GC-ORG-01-230-240	230-240	235	54.9	1.54		
2527-449	GC-ORG-01-240-250	240-250	245	50.6	4.57		
2527-451	GC-ORG-01-260-270	260-270	265	57.2	2.28		
2527-452	GC-ORG-01-270-280	270-280	275	64.1	1.11		
2527-454	GC-ORG-01-290-300	290-300	295	49.5	1.85		
2527-456	GC-ORG-01-310-320	310-320	315	51.4	0.435		
2527-457	GC-ORG-01-320-328	320-328	324	52.7	3.99		
2527-436	GC-SED-01 (19-20)	579-610	595	86.1	0.154		
@ = RPD	· · · · · · · · · · · · · · · · · · ·					w	4

<sup>@ =</sup> RPD

Check Standard known value = 6.71 dpm/g

<sup>\* = %</sup> difference

1529 West Sequim Bay Rd. Sequim, WA 98382

2527-418

GC-RAD-88-340-350

340-350

345

#### **Gowanus Canal Core 88** Pb-210 RESULTS IN SEDIMENT

(360) 683-4151 Results in disintegrations/minute/gram (dpm/g) Project 2527 Mean ACTIVITY **BATTELLE SPONSOR** Depth Depth Percent Dry Pb210 RPD CODE ID (cm) cm Weight (g) dpm/g (%)BLANK N/A N/A N/A N/A 0.000 BLANK SPIKE N/A N/A N/A N/A 0.000 CHECK STD N/A N/A N/A N/A 7.12 6% 2527-230 R1 GC-RAD-88-000-002 0-2 1 32.0 8.02 2527-230 R2 GC-RAD-88-004-006 0-21 32.0 8.94 11% @ 2527-231 GC-RAD-88-004-006 4-6 5 33.8 9.82 2527-232 GC-RAD-88-008-010 8-10 9 5.99 36.1 **BLANK** N/A N/A N/A N/A 0.000**BLANK SPIKE** N/A N/A N/A N/A 0.000 CHECK STD N/A N/A N/A N/A 8.61 28% 2527-233 R1 GC-RAD-88-012-014 12-14 13 32.6 8.42 2527-233 R2 GC-RAD-88-012-014 16-18 17 32.6 9.29 10% @ 2527-234 GC-RAD-88-016-018 16-18 17 34.8 8.00 2527-235 GC-RAD-88-020-022 20-22 21 29.6 10.7 2527-236 GC-RAD-88-024-026 24-26 25 41.5 5.37 2527-237 GC-RAD-88-028-030 28 - 3029 33.9 5.58 2527-238 GC-RAD-88-032-034 32-34 33 39.2 5.29 2527-239 GC-RAD-88-036-038 36-38 37 31.1 8.28 2527-240 GC-RAD-88-040-042 40-42 41 36.8 6.00 2527-241 44-46 GC-RAD-88-044-046 45 36.9 6.50 2527-242 GC-RAD-88-048-050 48-50 49 38.8 6.40 2527-244 GC-RAD-88-054-056 54-56 55 33.2 6.21 2527-246 GC-RAD-88-060-062 60-62 61 33.7 4.95 2527-248 GC-RAD-88-066-068 66-68 67 38.3 4.33 2527-250 GC-RAD-88-072-074 72-74 73 42.2 4.29 2527-252 GC-RAD-88-078-080 79 78-80 41.8 4.68 2527-254 GC-RAD-88-084-086 84-86 85 51.4 2.47 2527-256 GC-RAD-88-090-092 90-92 91 46.5 4.88 2527-258 GC-RAD-88-096-098 96-98 97 41.5 4.51 2527-260 GC-RAD-88-102-104 102-104 103 42.3 4.80 2527-262 GC-RAD-88-108-110 108-110 109 36.9 5.09 2527-264 GC-RAD-88-114-116 114-116 115 44.7 3.59 2527-266 GC-RAD-88-120-122 120-122 121 39.0 4.89 2527-268 GC-RAD-88-126-128 126-128 127 38.1 3.73 2527-270 GC-RAD-88-132-134 132-134 133 41.5 4.82 2527-272 GC-RAD-88-138-140 138-140 139 39.9 4.72 2527-274 GC-RAD-88-144-146 144-146 145 41.1 4.39 **BLANK** N/A N/A N/A N/A 0.000 **BLANK SPIKE** N/A N/A N/A N/A 0.000CHECK STD N/A N/A N/A N/A 7.26 8% 2527-409 R1 GC-RAD-88-160-170 160-170 165 34.2 4.02 2527-409 R2 GC-RAD-88-160-170 160-170 165 34.2 4.14 3% **@** 2527-410 GC-RAD-88-180-190 180-190 185 38.6 4.37 2527-411 GC-RAD-88-200-210 200-210 205 28.0 4.03 2527-412 GC-RAD-88-220-230 220-230 225 46,7 2.62 2527-413 GC-RAD-88-240-250 240-250 245 50.1 1.75 2527-414 GC-RAD-88-260-270 260-270 265 25.1 1.77 2527-415 GC-RAD-88-280-290 280-290 285 79.6 0.340 2527-416 GC-RAD-88-300-310 300-310 305 35.6 0.833 2527-417 R1 GC-RAD-88-320-330 320-330 325 77.8 0.449 2527-417 R2 GC-RAD-88-320-330 320-330 325

77.8

85.1

0.414

0.420

8%

@

**Gowanus Canal Core 88** 

**Pb-210 RESULTS IN SEDIMENT** 

Results in disintegrations/minute/gram (dpm/g)

Project 2527

8/14/06

			Mean		ACTIVITY	
BATTELLE CODE	SPONSOR ID	Depth (cm)	Depth cm	Percent Dry Weight (g)	Pb210 dpm/g	<b>RPD</b> (%)
BLANK	N/A	N/A	N/A	N/A	0.000	
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000	
CHECK STD	N/A	N/A	N/A	N/A	6.90	3%
2527-438	GC-SED-88 (15.9-16.9)	485-515	500	82.4	0.249	

<sup>@ =</sup> RPD

Check Standard known value = 6.71 dpm/g

<sup>\* = %</sup> difference

1529 West Sequim Bay Rd.

#### **Gowanus Canal Core 31** Pb-210 RESULTS IN SEDIMENT

Sequim, WA 98382 (360) 683-4151 Results in disintegrations/minute/gram (dpm/g) Project 2527 Mean ACTIVITY **BATTELLE SPONSOR** Depth Depth **Percent Dry** Pb210 **RPD** CODE ID (cm) cm Weight (g) dpm/g (%) **BLANK** N/A N/A N/A N/A 0.000 BLANK SPIKE N/A N/A N/A N/A 0.000 CHECK STD N/A N/A N/A N/A 6.08 9% 2527-276 R1 GC-RAD-31-000-002 0-21 31.9 6.46 2527-276 R2 GC-RAD-31-004-006 0-21 31.9 6.46 0% (a) 2527-277 GC-RAD-31-004-006 4-6 5 43.6 4.52 2527-278 GC-RAD-31-008-010 8-10 9 47.7 4.07 2527-279 GC-RAD-31-012-014 12-14 13 45.8 5.29 2527-280 GC-RAD-31-016-018 16-18 17 43.5 6.94 2527-281 GC-RAD-31-020-022 20-22 21 42.8 7.46 2527-282 GC-RAD-31-024-026 24-26 25 43.8 5.99 2527-283 GC-RAD-31-028-030 28-30 29 42.5 6.45 2527-284 GC-RAD-31-032-034 32-34 33 51.4 3.92 2527-285 GC-RAD-31-036-038 36-38 37 55.8 4.84 2527-286 GC-RAD-31-040-042 40-42 41 48.9 6.05 2527-287 GC-RAD-31-044-046 44-46 45 56.5 3.04 2527-288 GC-RAD-31-048-050 48-50 49 56.0 3.74 **BLANK** N/A N/A N/A N/A 0.000BLANK SPIKE N/A N/A N/A N/A 0.000 CHECK STD N/A N/A N/A N/A 4.64 31% 2527-290 R1 GC-RAD-31-054-056 54-56 55 57.2 1.55 2527-290 R2 GC-RAD-31-054-056 54-56 55 57.2 1.85 18% @# 2527-292 GC-RAD-31-060-062 60-62 61 55.8 2.47 2527-294 GC-RAD-31-066-068 66-68 67 43.7 3.05 # 2527-296 GC-RAD-31-072-074 72-74 73 51.6 2.43 # 2527-298 GC-RAD-31-078-080 78-80 79 49.5 2.27 2527-300 GC-RAD-31-084-086 84-86 85 49.2 3.22 2527-302 GC-RAD-31-090-092 90-92 91 50.7 2.58 2527-304 GC-RAD-31-096-098 96-98 97 47.0 3.35 2527-306 GC-RAD-31-102-104 102-104 103 38.1 5.05 # 2527-308 GC-RAD-31-108-110 108-110 109 36.3 4.78 2527-310 GC-RAD-31-114-116 114-116 115 36.3 4.57 2527-312 GC-RAD-31-120-122 120-122 121 36.9 4.51 2527-314 GC-RAD-31-126-128 126-128 127 34.5 # 4.78 2527-316 GC-RAD-31-132-134 132-134 133 35.0 4.44 # 2527-318 GC-RAD-31-138-140 138-140 139 34.8 3.89 # 2527-320 GC-RAD-31-144-146 144-146 145 32.4 4.90 # BLANK N/A N/A N/A N/A 0.000 BLANK SPIKE N/A N/A N/A N/A 0.000CHECK STD N/A N/A N/A N/A 6.45 4% 2527-426 R1 GC-RAD-31-150-160 150-160 155 37.9 6.22 2527-426 R2 GC-RAD-31-150-160 150-160 155 37.9 5.63 2527-427 GC-RAD-31-170-180 170-180 175 43.4 6.36 2527-428 GC-RAD-31-190-200 190-200 195 43.8 4.40 2527-429 GC-RAD-31-210-220 210-220 215 50.6 3.99 2527-430 GC-RAD-31-230-240 230-240 235 40.8 4.98 2527-431 GC-RAD-31-250-260 250-260 255 45.4 4.38 2527-432 GC-RAD-31-270-280 270-280 275 52.8 2.68

2527-433

2527-434

Check Standard known value = 6.71 dpm/g

GC-RAD-31-290-300

GC-RAD-31-310-320

GC-RAD-31-330-340

290-300

310-320

330-340

295

315

335

59.5

52.6

68.6

1.27

1.00

1.05

<sup>2527-435</sup> @ = RPD

<sup>\* = %</sup> difference

<sup># =</sup> Data should be considered estimates due to criteria exceedance for check sample.

8/14/06

1529 West Sequim Bay Rd.

#### **Gowanus Canal Core 12 Pb-210 RESULTS IN SEDIMENT**

Sequim, WA 98382 (360) 683-4151 Results in disintegrations/minute/gram (dnm/g)

(360) 683-4151	Kesuits	in disinteg		nute/gram (dpm/g		Project 2	2527
			Mean		ACTIVITY		7
BATTELLE	SPONSOR	Depth	Depth	Percent Dry	Pb210	RPD	
CODE	ID	(cm)	cm	Weight (g)	dpm/g	(%)	
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	4.64	31%	*
2527-46 R1	GC-RAD-12-000-002	0-2	1	35.1	5.18	0.70	#
2527-46 R2	GC-RAD-12-000-002	0-2	1	35.1	4.73	9%	@#
2527-47	GC-RAD-12-004-006	4-6	5	36.8	5.07		#
2527-48	GC-RAD-12-008-010	8-10	9	33.0	5.34		#
2527-49	GC-RAD-12-012-014	12-14	13	38.2	6.26		#
2527-50	GC-RAD-12-016-018	16-18	17	38.9	3.10		#
2527-51	GC-RAD-12-020-022	20-22	21	31.1	4.94		#
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		1
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	6.32	6%	*
2527-52	GC-RAD-12-024-026	24-26	25	30.8	5.98		
2527-53	GC-RAD-12-028-030	28-30	29	33.1	7.20		
2527-54	GC-RAD-12-032-034	32-34	33	37.7	6.52		
2527-55	GC-RAD-12-036-038	36-38	37	36.9	7.59		
2527-56	GC-RAD-12-040-042	40-42	41	35.8	7.28		
2527-57	GC-RAD-12-044-046	44-46	45	43.4	6.28		
2527-58	GC-RAD-12-048-050	48-50	49	39.8	7.21		
2527-60	GC-RAD-12-054-056	54-56	55	35.8	7.13		
2527-62	GC-RAD-12-060-062	60-62	61	37.2	6.18		
2527-64	GC-RAD-12-066-068	66-68	67	39.3	5.78		
2527-66 R1	GC-RAD-12-072-074	72-74	73	37.7	5.66		
2527-66 R2	GC-RAD-12-072-074	72-74	73	37.7	5.15	9%	@
2527-68	GC-RAD-12-078-080	78-80	79	39.3	8.22		İ
2527-70	GC-RAD-12-084-086	84-86	85	38.2	6.63		
2527-72	GC-RAD-12-090-092	90-92	91	42.9	1.73		
2527-74	GC-RAD-12-096-098	96-98	97	34.7	15.1		İ
2527-76	GC-RAD-12-102-104	102-104	103	33.0	12.4		
2527-78	GC-RAD-12-108-110	108-110	109	25.9	8.21		
2527-80	GC-RAD-12-114-116	114-116	115	33.0	15.1		
2527-82	GC-RAD-12-120-122	120-122	121	31.3	15.3		
2527-84	GC-RAD-12-126-128	126-128	127	33.8	14.3		
2527-86	GC-RAD-12-132-134	132-134	133	33.8	16.2		
2527-88	GC-RAD-12-138-140	138-140	139	34.2	11.7		
2527-90	GC-RAD-12-144-146	144-146	145	32.3	15.2		

<sup>@ =</sup> RPD

<sup>\* = %</sup> difference

Check Standard known value = 6.71 dpm/g # = Data should be considered estimates due to criteria exceedance for check sample.

1529 West Sequim Bay Rd. Sequim, WA 98382

#### Gowanus Canal Core 21 Pb-210 RESULTS IN SEDIMENT

(360) 683-4151 Results in disintegrations/minute/gram (dpm/g) Project 2527 Mean ACTIVITY **BATTELLE SPONSOR** Depth Depth **Percent Dry** Pb210 **RPD** CODE ID (cm) cm Weight (g) dpm/g (%) **BLANK** N/A N/A N/A N/A 0.000 **BLANK SPIKE** N/A N/A N/A N/A 0.000 **CHECK STD** N/A N/A N/A N/A 6.32 6% 2527-92 R1 GC-RAD-21-000-002 0-21 44.1 5.53 2527-92 R2 GC-RAD-21-000-002 0-21 44.1 6.83 21% @ 2527-93 GC-RAD-21-004-006 4-6 5 46.0 6.87 2527-94 GC-RAD-21-008-010 8-10 9 48.5 6.97 2527-95 GC-RAD-21-012-014 12-14 13 46.0 6.61 2527-96 GC-RAD-21-016-018 16-18 17 48.1 6.53 2527-97 GC-RAD-21-020-022 20-22 21 48.7 5.70 2527-98 GC-RAD-21-024-026 24-26 25 47.7 5.17 2527-99 GC-RAD-21-028-030 28-30 29 46.6 3.82 2527-100 GC-RAD-21-032-034 32-34 33 48.8 3.99 2527-101 GC-RAD-21-036-038 36-38 37 48.3 5.45 2527-102 GC-RAD-21-040-042 40-42 41 70.7 0.898 2527-103 GC-RAD-21-044-046 44-46 45 45.9 4.90 **BLANK** N/A N/A N/A N/A 0.000**BLANK SPIKE** N/A N/A N/A N/A 0.000 CHECK STD N/A N/A N/A N/A 8.58 28% 2527-104 R1 GC-RAD-21-048-050 48-50 49 65.3 6.88 2527-104 R2 GC-RAD-21-048-050 48-50 49 65.3 6.49 2527-106 GC-RAD-21-054-056 54-56 55 48.2 3.88 2527-108 GC-RAD-21-060-062 60-62 61 54.8 3.79 2527-110 GC-RAD-21-066-068 66-68 67 51.5 4.21 2527-112 GC-RAD-21-072-074 72-74 73 50.4 5.02 2527-114 GC-RAD-21-078-080 78-80 79 55.9 3.22 2527-116 GC-RAD-21-084-086 84-86 85 50.2 2.47 2527-118 GC-RAD-21-090-092 90-92 91 50.5 5.87 2527-120 GC-RAD-21-096-098 96-98 97 50.9 4.77 2527-122 GC-RAD-21-102-104 102-104 103 48.7 4.97 2527-124 GC-RAD-21-108-110 108-110 109 50.5 6.69 2527-126 GC-RAD-21-114-116 114-116 115 55.8 1.39 2527-128 GC-RAD-21-120-122 120-122 121 49.1 4.51 2527-130 GC-RAD-21-126-128 126-128 127 67.0 1.44 2527-132 GC-RAD-21-132-134 132-134 133 53.3 3.80 2527-134 GC-RAD-21-138-140 138-140 139 64.5 4.36 2527-136 GC-RAD-21-144-146 144-146 145 54.7 4.19 **BLANK** N/A N/A N/A N/A 0.000**BLANK SPIKE** N/A N/A N/A N/A 0.000**CHECK STD** N/A N/A N/A 3% N/A 6.90 2527-458 GC-ORG-21-150-160 150-160 155 48.6 3.64

GC-SED-21B (7-8)

213-244

229

75.2

0.735

<sup>2527-437</sup> @ = RPD

<sup>\* = %</sup> difference

Check Standard known value = 6.71 dpm/g

1529 West Sequim Bay Rd. Sequim, WA 98382 (360) 683-4151

**Pb-210 RESULTS IN SEDIMENT** 

8/14/06

(360) 683-4151	Results i	n disintegi	rations/mi	nute/gram (dpm/g	)	Project 2	2527
			Mean		ACTIVITY		7
BATTELLE	<b>SPONSOR</b>	Depth	Depth	Percent Dry	Pb210	RPD	
CODE	ID	(cm)	cm	Weight (g)	dpm/g	(%)	
BLANK	N/A	N/A	N/A	NA	0.000		
BLANK SPIKE	N/A	N/A	N/A	NA	0.000		ĺ
CHECK STD	N/A	N/A	N/A	NA	8.41	25%	*
2527-368 R1	GC-RAD-60B-000-002	0-2	1	64.5	0.950	2370	
2527-368 R2	GC-RAD-60B-000-002	0-2	1	64.5	0.746	24%	@
2527-369	GC-RAD-60B-004-006	4-6	5	71.9	0.332		
2527-370	GC-RAD-60B-008-010	8-10	9	69.4	0.349		
2527-371	GC-RAD-60B-012-014	12-14	13	70.2	0.302		
2527-372	GC-RAD-60B-016-018	16-18	17	75.1	0.194		
2527-373	GC-RAD-60B-020-022	20-22	21	78.8	0.157		
2527-374	GC-RAD-60B-024-026	24-26	25	80.5	0.180		
2527-375	GC-RAD-60B-028-030	28-30	29	80.7	0.186		
2527-376	GC-RAD-60B-032-034	32-34	33	80.6	0.134		
2527-377	GC-RAD-60B-036-038	36-38	37	77.9	0.153		
2527-378	GC-RAD-60B-040-042	40-42	41	77.5	0.169		
2527-379	GC-RAD-60B-044-046	44-46	45	77.9	0.204		
BLANK	N/A	N/A	N/A	NA	0.000		
BLANK SPIKE	N/A	N/A	N/A	NA	0.000		
CHECK STD	N/A	N/A	N/A	NA	6.90	3%	*
2527-380	GC-RAD-60B-048-050	48+50	49	79.5	0.179		
2527-382	GC-RAD-60B-054-056	54+56	55	74.3	0.259		
2527-384	GC-RAD-60B-060-062	60-62	61	69.7	0.528		
2527-386	GC-RAD-60B-066-068	66-68	67	58.2	0.302		
2527-388	GC-RAD-60B-072-074	72-74	73	63.7	0.757		
2527-390	GC-RAD-60B-078-080	78-80	79	58.9	1.17		
2527-392	GC-RAD-60B-084-086	84-86	85	57.4	0.896		1
2527-394	GC-RAD-60B-090-092	90-92	91	66.6	0.527		
2527-396	GC-RAD-60B-096-098	96-98	97	67.0	0.470		1
2527-398	GC-RAD-60B-102-104	102-104	103	74.1	0.605		
2527-400	GC-RAD-60B-108-110	108-110	109	70.1	0.475		
2527-402	GC-RAD-60B-114-116	114-116	115	78.8	0.390		
2527-404	GC-RAD-60B-120-122	120-122	121	55.6	0.671		
2527-406	GC-RAD-60B-126-128	126-128	127	55.6	0.589		
2527-408	GC-RAD-60B-132-134	132-134	133	54.0	0.612		

<sup>@ =</sup> RPD

Check Standard known value = 6.71 dpm/g

<sup>\* = %</sup> difference

#### **Gowanus Canal Core 87 Pb-210 RESULTS IN SEDIMENT**

(360) 683-4151	- ~			SEDIMENT nute/gram (dpm/g	2)	Project 2	2527
			Mean	<u> </u>	ACTIVITY		7
BATTELLE	SPONSOR	Depth	Depth	<b>Percent Dry</b>	Pb210	RPD	
CODE	ID	(cm)	cm	Weight (g)	dpm/g	(%)	
BLANK	N/A	N/A	N/A	NA	0.000		
BLANK SPIKE	N/A	N/A	N/A	NA	0.000		
CHECK STD	N/A	N/A	N/A	NA	5.42	19%	*
2527-138 R1	GC-RAD-87-000-002	0-2	1	27.4	8.99	1770	
2527-138 R2	GC-RAD-87-000-002	0-2	1	27.4	9.70	8%	@
2527-139	GC-RAD-87-004-006	4-6	5	30.4	7.99	0 70	
2527-140	GC-RAD-87-008-010	8-10	9	25.8	13.6		
2527-141	GC-RAD-87-012-014	12-14	13	27.5	6.96		
2527-142	GC-RAD-87-016-018	16-18	17	32.4	7.31		
2527-143	GC-RAD-87-020-022	20-22	21	30.3	6.98		
2527-144	GC-RAD-87-024-026	24-26	25	37.9	6.09		
2527-145	GC-RAD-87-028-030	28-30	29	36.3	7.91		
2527-146	GC-RAD-87-032-034	32-34	33	40.5	5.34		
2527-147	GC-RAD-87-036-038	36-38	37	41.0	4.74		
2527-148	GC-RAD-87-040-042	40-42	41	37.9	4.76		
2527-149	GC-RAD-87-044-046	44-46	45	34.5	4.70		
BLANK	N/A	N/A	N/A	NA	0.000		
BLANK SPIKE	N/A	N/A	N/A	NA NA	0.000		1
CHECK STD	N/A	N/A	N/A	NA NA	7.26	8%	*
2527-150 R1	GC-RAD-87-048-050	48+50	49	39.9	3.83	8%	"
2527-150 R2	GC-RAD-87-048-050	48+50	49 49	39.9 39.9		207	
2527-150 K2	GC-RAD-87-054-056	54+56	55	41.4	3.94	3%	@
2527-154	GC-RAD-87-060-062	60-62	61	42.1	4.30		
2527-156	GC-RAD-87-066-068	66-68	67	42.1	2.72 2.72		
2527-158	GC-RAD-87-072-074	72-74	73	43.6			
2527-160	GC-RAD-87-072-074 GC-RAD-87-078-080	72-74 78-80	73 79	43.5	2.59		
2527-162	GC-RAD-87-084-086	84-86	85	43.3 44.1	2.41		
2527-164	GC-RAD-87-090-092	90-92	91	44.1 44.9	2.39		
2527-166	GC-RAD-87-090-092 GC-RAD-87-096-098	90-92 96-98	91 97		2.19		
2527-168	GC-RAD-87-102-104	90-98 102-104		44.5	1.94		
2527-170	GC-RAD-87-102-104 GC-RAD-87-108-110	102-104	103	42.4	2.64		
2527-170	GC-RAD-87-114-116		109	42.7	3.13		
2527-174	GC-RAD-87-114-110 GC-RAD-87-120-122	114-116	115	45.3	4.04		
2527-176	GC-RAD-87-126-128	120-122 126-128	121	45.0	2.92		
2527-178	GC-RAD-87-120-128 GC-RAD-87-132-134		127	46.7	2.51		
2527-178 2527-180		132-134	133	45.8	2.44		
2527-180 2527-182	GC-RAD-87-138-140	138-140	139	45.4	2.78		
BLANK	GC-RAD-87-144-146	144-146	145	45.7	2.59		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	0.000		
	N/A	N/A	N/A	N/A	5.78	14%	*
2527-419 2527-420	GC-RAD-87-160-170	160-170	165	35.5	1.90		
2527-420 2527-421	GC-RAD-87-180-190	180-190	185	29.8	1.66		
2527-421	GC-RAD-87-200-210	200-210	205	45.8	0.865		
2527-422 2527-422	GC-RAD-87-220-230	220-230	225	84.9	0.516		1
2527-423	GC-RAD-87-240-250	240-250	245	64.5	0.869		
2527-424 2527-425	GC-RAD-87-260-270	260-270	265	76.9	0.379		
$\frac{2527-425}{@ = RPD}$	GC-RAD-87-280-290	280-290	285	77.9	0.422		l

<sup>@ =</sup> RPD

Check Standard known value = 6.71 dpm/g

<sup>\* = %</sup> difference

### QA/QC NARRATIVE

PROJECT:

GEI Cores 01, 88, 31, 12, 21, 87 Radionuclide Analysis: 137Cs PARAMETER:

LABORATORY:

Battelle Marine Sciences Laboratory, Sequim, Washington

MATRIX:

Sediment

Includes samples

2527\*15,17,21,23,19,25,27,29,31,33,35,37,39,41,43,45,440,443,444,448-452, 454,456,457,56-58,60,62,64,66,68,70,72,74,76,78,80,82,122,124,128,132 134,136,458,437, 304,306,308,310,312,314,316,318,320,426—435,156,158, 160,162,164,166, 168,170,172,174,176,178,180,182,419-423,258,260,262,

264,266,268,270, 272,274,409-418,438

SAMPLE CUSTODY AND PROCESSING: One hundred fourteen samples were freeze-dried and counted by gamma

spectroscopy for <sup>137</sup>Cs.

DATA QUALITY **OBJECTIVES:** 

<sup>137</sup>Cs Check Standard Accuracy:

≤ 30% PD

Replicate Precision (Duplicate):

≤ 30% RPD

METHOD:

Analysis of sediment samples for gamma-emitting isotopes such as <sup>137</sup>Cs was conducted according to Battelle SOP MSL-C-013, Analyses of <sup>137</sup>Cs and other Gamma Emitting Isotopes by Gamma Counting. Samples were counted using a Canberra Series 40 MCA gamma counter for approximately 12 - 24 hours each. After counting and calculations, sample results are reported as <sup>137</sup>Cs

activity in units of disintegrations per minute per gram.

**DETECTION LIMIT:** 

The detection limit is defined as three times the square root of the background

counts and is calculated for each sample.

STANDARD DISK COUNTS:

A <sup>137</sup>Cs standard disk was counted to set the instrument channels for the region of interest around the <sup>137</sup>Cs peak. Counts from the <sup>137</sup>Cs standard disk were also used in the calculation of the <sup>137</sup>Cs decay rate.

**CHECK STANDARD** ACCURACY:

Check standard IAEA 135 was analyzed initially and approximately every 20 samples analyzed. Results of check standard analyses were 13, 23, 9, 9, 9, 11, 9, and 11 percent difference (PD) and were within the QC acceptance

criteria of ±30% PD.

REPLICATE PRECISION:

One replicate sample was counted for each batch of samples. Results were 31, 11, NA (not calculable due to a value less than the DL), 6, and 12 relative percent difference. Sample 2527-25 had a precision of 31% that exceeds our default criteria of ±30%, however the sample results were near the level of detection for the instrument. Other calculable recoveries were within the criteria of ±30% RPD.

Battelle Marine Sciences Laboratory 1529 West Sequim Bay Rd. Sequim, WA 98382 (360) 683-4151

### Cs-137 Results in Sediments GOWANUS

### Samples received 1/24-31/06

Results reported in disintegrations/minute/gram

PROJECT: 2527

BATTELLE   Core   SPONSOR   Depth   Dry Wt.   Crop   (g)   (dis/min/g)						Percent	Cs137 detection	Cs 137	SRM CERTIFIED	
CODE         UD         CODE         (cm)         (g)         (g)         (dis/min/g)         (dry wi.)         dis/min/g           Core 01         IAEA-135         NA         IAEA-135         NA         II.0         NA         0.389         42.6         48.8         13%           IAEA-135         NA         IAEA 135         NA         11.0         NA         0.362         37.8         48.8         23%           IAEA-135         NA         IAEA 135         NA         11.0         NA         0.608         44.4         48.8         9%           IAEA-135         NA         IAEA 135         NA         11.0         NA         0.608         44.4         48.8         9%           IAEA-135         NA         IAEA 135         NA         11.0         NA         0.649         44.6         48.8         11%           IAEA-135         NA         IAEA 135         NA         11.0         NA         0.433         44.3         48.8         9%           IAEA-135         NA         IAEA 135         NA         11.0         NA         0.433         44.3         48.8         11%           IAEA-135         NA         IAEA 135         NA	BATTELLE	Core	SPONSOR	Denth	Drv Wt.	Dry Wt.		dis/min/σ		%RPD
Core 01	1			_	-	,		_		/ KI D
JAEA-135   NA			CODE	(CIII)	(g)	(8)	(uis/iiii/g)	(ury wt.)	uis/iiii/g	
IAEA-135		NΔ	IAFA 135	NΔ	11.0	N/A	0.380	12.6	100	1207
JAEA-135   NA						1				
JAEA-135   NA						1				
IAEA-135	B .									
IAEA-135						1				
IAEA-135	ł					I.				
JAEA-135	1					i .				
2527-15 NA GC-RAD-01-054-056 54-56 44.0 51.7 0.155 U.2527-17 NA GC-RAD-01-060-062 60-62 107 80.1 0.047 0.0785 U.2527-21 NA GC-RAD-01-072-074 72-74 100 79.3 0.053 0.103 2527-23 NA GC-RAD-01-072-074 72-74 100 79.3 0.053 0.103 2527-23 NA GC-RAD-01-084-080 78-80 72.0 61.5 0.100 0.139 2527-19 NA GC-RAD-01-084-086 84-86 44.2 51.4 0.111 0.233 2527-25 R1 NA GC-RAD-01-084-086 84-86 44.2 51.4 0.111 0.233 2527-25 R2 NA GC-RAD-01-084-086 84-86 44.2 51.4 0.111 0.233 2527-27 NA GC-RAD-01-080-092 90-92 107 79.9 0.068 0.0925 2527-39 NA GC-RAD-01-08-104 102-104 73.4 68.9 0.060 0.103 2527-33 NA GC-RAD-01-08-110 108-110 100 77.2 0.073 0.164 2527-35 NA GC-RAD-01-102-104 102-104 73.4 68.9 0.060 0.103 2527-35 NA GC-RAD-01-102-104 102-104 73.4 68.9 0.060 0.103 2527-35 NA GC-RAD-01-102-110 100 77.2 0.073 0.164 2527-35 NA GC-RAD-01-122 120-122 120-122 62.3 63.2 0.110 0.195 2527-39 NA GC-RAD-01-126-128 126-128 14.2 51.4 0.122 0.220 2527-31 NA GC-RAD-01-126-128 126-128 14.2 51.4 0.122 0.220 2527-34 NA GC-RAD-01-126-128 126-128 14.2 51.4 0.122 0.220 2527-44 NA GC-RAD-01-132-134 132-134 81.0 64.6 0.086 0.0992 2527-43 NA GC-RAD-01-132-134 132-134 81.0 64.6 0.086 0.0992 2527-443 NA GC-RAD-01-180-190 180-190 30.7 64.4 0.162 0.374 1.10 2527-445 NA GC-ORG-01-180-190 180-190 30.7 64.4 0.162 0.374 1.10 2527-449 NA GC-ORG-01-180-190 180-190 30.7 64.4 0.162 0.374 1.10 2527-449 NA GC-ORG-01-20-200 190-200 13.7 47.9 0.477 1.10 2527-449 NA GC-ORG-01-20-200 200-200 13.7 47.9 0.477 1.10 2527-445 NA GC-ORG-01-20-200 200-200 13.7 47.9 0.477 1.10 2527-445 NA GC-ORG-01-20-200 200-200 13.7 47.9 0.477 1.10 2527-445 NA GC-ORG-01-20-200 200-200 13.7 47.9 0.477 1.10 2527-445 NA GC-ORG-01-20-200 200-200 13.7 47.9 0.477 1.10 2527-45 NA GC-ORG-01-20-200 200-200 13.7 40.9 0.483 0.252 0.252 0.252 0.252 0.252 0.252 0.252 0.252 0.252 0.252 0.252	1					l .				
2527-17 NA GC-RAD-01-060-062 60-62 107 80.1 0.047 0.0785   2527-21 NA GC-RAD-01-072-074 72-74 100 79.3 0.053 0.103   2527-23 NA GC-RAD-01-078-080 78-80 72.0 61.5 0.100 0.139   2527-19 NA GC-RAD-01-084-086 78-80 72.0 61.5 0.100 0.139   2527-19 NA GC-RAD-01-084-086 84-86 44.2 51.4 0.111 0.233   2527-25 R2 NA GC-RAD-01-084-086 84-86 44.2 51.4 0.111 0.233   2527-27 NA GC-RAD-01-084-086 84-86 44.2 51.4 0.111 0.233   2527-27 NA GC-RAD-01-090-092 90-92 107 79.9 0.068 0.0925   2527-31 NA GC-RAD-01-090-092 90-92 107 79.9 0.068 0.0925   2527-33 NA GC-RAD-01-102-104 102-104 73.4 68.9 0.060 0.103   2527-33 NA GC-RAD-01-108-110 108-110 100 77.2 0.073 0.164   2527-33 NA GC-RAD-01-104-116 114-116 47.4 63.4 0.102 0.177   2527-37 NA GC-RAD-01-126-128 126-128 41.2 51.4 0.122 0.220   2527-31 NA GC-RAD-01-126-128 126-128 41.2 51.4 0.122 0.220   2527-43 NA GC-RAD-01-138-140 138-140 138-140 138-140 138-140 138-140 NA GC-RAD-01-138-140 138-140 138-140 NA GC-RAD-01-138-140 138-140 138-140 NA GC-RAD-01-138-140 138-140 138-140 NA GC-RAD-01-138-140 138-140 138-140 NA GC-RAD-01-120-120 109-000 19-000 13.7 49.9 0.528 0.528 U   2527-443 NA GC-RAD-01-120-100 150-160 150-160 14.3 48.9 0.528 0.528 U   2527-444 NA GC-ORG-01-130-100 150-160 14-13 48.9 0.528 0.528 U   2527-448 NA GC-ORG-01-200 19-0200 13.7 47.9 0.477 1.10   2527-448 NA GC-ORG-01-2000 19-0200 13.7 47.9 0.477 1.10   2527-448 NA GC-ORG-01-2000 19-0200 13.7 49.9 0.477 1.10   2527-449 NA GC-ORG-01-2000 19-0200 13.7 49.9 0.477 1.10   2527-449 NA GC-ORG-01-2000 19-0200 13.7 57.2 0.648 2.70 111%   2527-450 NA GC-ORG-01-20-250 240-250 15.8 50.6 0.407 1.66   2527-451 NA GC-ORG-01-20-250 240-250 15.8 50.6 0.407 1.66   2527-451 NA GC-ORG-01-20-080 29-0300 14.6 49.5 0.322 1.02   2527-452 NA GC-ORG-01-20-080 29-0300 14.6 49.5 0.322 1.02   2527-450 NA GC-RAD-12-040-042 40-42 26.5 35.8 0.280 0.377   2527-58 NA GC-RAD-12-040-042 40-43 44-64 35.6 43.4 0.147 0.614   2527-64 NA GC-RAD-12-040-062 60-62 37.5 37.2 0.189 0.483   2527-60 NA GC-RAD-12-0800 78-80 37.7 39.3 0.135 0.467   2527-70 NA GC-RAD-1									40.0	11%
2527-21 NA GC-RAD-01-072-074 72-74 100 79.3 0.053 0.103   2527-23 NA GC-RAD-01-078-080 78-80 72.0 61.5 0.100 0.139   2527-25 R1 NA GC-RAD-01-078-080 78-80 103 76.4 0.070 0.0699 U   2527-25 R1 NA GC-RAD-01-084-086 84-86 44.2 51.4 0.111 0.233   2527-27 NA GC-RAD-01-090-092 90-92 107 79.9 0.068 0.0925   2527-29 NA GC-RAD-01-090-092 90-92 107 79.9 0.068 0.0925   2527-29 NA GC-RAD-01-091-014 102-104 73.4 68.9 0.060 0.103   2527-33 NA GC-RAD-01-108-110 108-110 100 77.2 0.073 0.164   2527-33 NA GC-RAD-01-108-110 108-110 100 77.2 0.073 0.164   2527-37 NA GC-RAD-01-102-12 120-122 62.3 63.2 0.110 0.195   2527-39 NA GC-RAD-01-122-120-122 120-122 62.3 63.2 0.110 0.195   2527-39 NA GC-RAD-01-132-134 132-134 81.0 64.6 0.086 0.0992   2527-45 NA GC-RAD-01-138-140 188-140 38.7 58.1 0.171 0.310   2527-45 NA GC-RAD-01-138-140 188-140 38.7 58.1 0.171 0.310   2527-443 NA GC-RAD-01-138-140 188-140 38.7 58.1 0.171 0.310   2527-443 NA GC-RAD-01-138-140 188-140 38.7 58.1 0.171 0.310   2527-444 NA GC-ORG-01-180-190 180-190 30.7 64.4 0.162 0.374   NA GC-RAD-01-180-190 180-190 30.7 64.4 0.162 0.374   NA GC-RAD-01-180-190 180-190 30.7 64.4 0.162 0.374   NA GC-ORG-01-190-200 190-200 13.7 47.9 0.477 1.10   2527-449 NA GC-ORG-01-20-20 240-250 15.8 50.6 0.407 1.66   2527-445 NA GC-ORG-01-20-20 240-250 15.8 50.6 0.407 1.66   2527-45 NA GC-ORG-01-20-20 200-270 17.6 57.2 0.648 2.70   2527-45 NA GC-ORG-01-20-20 270 260-270 17.6 57.2 0.648 2.70   2527-45 NA GC-ORG-01-20-20 270-280 19.4 64.1 0.355 2.20   2527-45 NA GC-ORG-01-30-320 310-320 15.7 51.4 0.245 1.26   2527-45 NA GC-ORG-01-30-30 310-320 15.7 51.4 0.245 1.26   2527-45 NA GC-RAD-12-040-042 40-42 26.5 528 V   2527-45 NA GC-RAD-12-040-062 60-62 37.5 37.5 37.2 0.189 0.483   2527-46 NA GC-RAD-12-040-062 60-62 37.5 37.5 37.2 0.189 0.483   2527-64 NA GC-RAD-12-08-060 68-68 66-68 40.6 39.3 0.119 0.568   2527-62 NA GC-RAD-12-08-060 68-68 66-68 40.6 39.3 0.119 0.568   2527-70 NA GC-RAD-12-08-080 78-80 137.7 39.3 0.135 0.467   2527-70 NA GC-RAD-12-08-080 78-80 137.7 39.3 0.135 0.521   2527-70 NA GC-RA										
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2527-451 R1 NA GC-ORG-01-260-270 260-270 17.6 57.2 0.377 2.41 2527-451 R2 NA GC-ORG-01-260-270 260-270 12.0 57.2 0.648 2.70 2527-452 NA GC-ORG-01-270-280 270-280 19.4 64.1 0.355 2.20 2527-454 NA GC-ORG-01-290-300 290-300 14.6 49.5 0.322 1.02 2527-456 NA GC-ORG-01-310-320 310-320 15.7 51.4 0.245 1.26 2527-457 NA GC-ORG-01-320-328 320-328 15.1 52.7 0.341 3.43 2527-56 NA GC-RAD-12-040-042 40-42 26.5 35.8 0.280 0.377 2527-57 NA GC-RAD-12-044-046 44-46 35.6 43.4 0.147 0.614 2527-58 NA GC-RAD-12-048-050 48-50 31.7 39.8 0.155 0.604 2527-60 NA GC-RAD-12-054-056 54-56 25.3 35.8 0.228 0.722 2527-62 NA GC-RAD-12-066-062 60-62 37.5 37.2 0.189 0.483 2527-64 NA GC-RAD-12-066-068 66-68 40.6 39.3 0.119 0.568 2527-66 NA GC-RAD-12-072-074 72-74 35.1 37.7 0.208 0.331 2527-68 NA GC-RAD-12-078-080 78-80 37.7 39.3 0.135 0.467 2527-70 NA GC-RAD-12-084-086 84-86 28.2 38.2 0.253 0.521 2527-72 NA GC-RAD-12-084-086 84-86 28.2 38.2 0.253 0.521 2527-72 NA GC-RAD-12-090-092 90-92 31.0 42.9 0.160 0.418	l									
2527-451 R2 NA GC-ORG-01-260-270 260-270 12.0 57.2 0.648 2.70 2527-452 NA GC-ORG-01-270-280 270-280 19.4 64.1 0.355 2.20 2527-454 NA GC-ORG-01-290-300 290-300 14.6 49.5 0.322 1.02 2527-456 NA GC-ORG-01-310-320 310-320 15.7 51.4 0.245 1.26 2527-457 NA GC-ORG-01-320-328 320-328 15.1 52.7 0.341 3.43 2527-56 NA GC-RAD-12-040-042 40-42 26.5 35.8 0.280 0.377 2527-57 NA GC-RAD-12-044-046 44-46 35.6 43.4 0.147 0.614 2527-58 NA GC-RAD-12-048-050 48-50 31.7 39.8 0.155 0.604 2527-60 NA GC-RAD-12-054-056 54-56 25.3 35.8 0.228 0.722 2527-62 NA GC-RAD-12-060-062 60-62 37.5 37.2 0.189 0.483 2527-64 NA GC-RAD-12-060-062 60-62 37.5 37.2 0.189 0.483 2527-64 NA GC-RAD-12-072-074 72-74 35.1 37.7 0.208 0.331 2527-68 NA GC-RAD-12-078-080 78-80 37.7 39.3 0.135 0.467 2527-70 NA GC-RAD-12-084-086 84-86 28.2 38.2 0.253 0.521 2527-72 NA GC-RAD-12-090-092 90-92 31.0 42.9 0.160 0.418	1									
2527-452 NA GC-ORG-01-270-280 270-280 19.4 64.1 0.355 2.20 2527-454 NA GC-ORG-01-290-300 290-300 14.6 49.5 0.322 1.02 2527-456 NA GC-ORG-01-310-320 310-320 15.7 51.4 0.245 1.26 2527-457 NA GC-ORG-01-320-328 320-328 15.1 52.7 0.341 3.43   Core 12 2527-56 NA GC-RAD-12-040-042 40-42 26.5 35.8 0.280 0.377 2527-57 NA GC-RAD-12-044-046 44-46 35.6 43.4 0.147 0.614 2527-58 NA GC-RAD-12-048-050 48-50 31.7 39.8 0.155 0.604 2527-60 NA GC-RAD-12-054-056 54-56 25.3 35.8 0.228 0.722 2527-62 NA GC-RAD-12-060-062 60-62 37.5 37.2 0.189 0.483 2527-64 NA GC-RAD-12-060-062 60-62 37.5 37.2 0.189 0.483 2527-64 NA GC-RAD-12-060-068 66-68 40.6 39.3 0.119 0.568 2527-66 NA GC-RAD-12-072-074 72-74 35.1 37.7 0.208 0.331 2527-68 NA GC-RAD-12-078-080 78-80 37.7 39.3 0.135 0.467 2527-70 NA GC-RAD-12-084-086 84-86 28.2 38.2 0.253 0.521 2527-72 NA GC-RAD-12-090-092 90-92 31.0 42.9 0.160 0.418						1				
2527-454 NA GC-ORG-01-290-300 290-300 14.6 49.5 0.322 1.02 2527-456 NA GC-ORG-01-310-320 310-320 15.7 51.4 0.245 1.26 2527-457 NA GC-ORG-01-320-328 320-328 15.1 52.7 0.341 3.43  Core 12 2527-56 NA GC-RAD-12-040-042 40-42 26.5 35.8 0.280 0.377 2527-57 NA GC-RAD-12-044-046 44-46 35.6 43.4 0.147 0.614 2527-58 NA GC-RAD-12-048-050 48-50 31.7 39.8 0.155 0.604 2527-60 NA GC-RAD-12-054-056 54-56 25.3 35.8 0.228 0.722 2527-62 NA GC-RAD-12-060-062 60-62 37.5 37.2 0.189 0.483 2527-64 NA GC-RAD-12-066-068 66-68 40.6 39.3 0.119 0.568 2527-66 NA GC-RAD-12-072-074 72-74 35.1 37.7 0.208 0.331 2527-68 NA GC-RAD-12-078-080 78-80 37.7 39.3 0.135 0.467 2527-70 NA GC-RAD-12-084-086 84-86 28.2 38.2 0.253 0.521 2527-72 NA GC-RAD-12-090-092 90-92 31.0 42.9 0.160 0.418										11%
2527-456 NA GC-ORG-01-310-320 310-320 15.7 51.4 0.245 1.26 2527-457 NA GC-ORG-01-320-328 320-328 15.1 52.7 0.341 3.43  Core 12 2527-56 NA GC-RAD-12-040-042 40-42 26.5 35.8 0.280 0.377 2527-57 NA GC-RAD-12-044-046 44-46 35.6 43.4 0.147 0.614 2527-58 NA GC-RAD-12-048-050 48-50 31.7 39.8 0.155 0.604 2527-60 NA GC-RAD-12-054-056 54-56 25.3 35.8 0.228 0.722 2527-62 NA GC-RAD-12-060-062 60-62 37.5 37.2 0.189 0.483 2527-64 NA GC-RAD-12-066-068 66-68 40.6 39.3 0.119 0.568 2527-66 NA GC-RAD-12-072-074 72-74 35.1 37.7 0.208 0.331 2527-68 NA GC-RAD-12-078-080 78-80 37.7 39.3 0.135 0.467 2527-70 NA GC-RAD-12-084-086 84-86 28.2 38.2 0.253 0.521 2527-72 NA GC-RAD-12-090-092 90-92 31.0 42.9 0.160 0.418						E				
2527-457 NA GC-ORG-01-320-328 320-328 15.1 52.7 0.341 3.43  Core 12  2527-56 NA GC-RAD-12-040-042 40-42 26.5 35.8 0.280 0.377  2527-57 NA GC-RAD-12-044-046 44-46 35.6 43.4 0.147 0.614  2527-58 NA GC-RAD-12-048-050 48-50 31.7 39.8 0.155 0.604  2527-60 NA GC-RAD-12-054-056 54-56 25.3 35.8 0.228 0.722  2527-62 NA GC-RAD-12-060-062 60-62 37.5 37.2 0.189 0.483  2527-64 NA GC-RAD-12-066-068 66-68 40.6 39.3 0.119 0.568  2527-66 NA GC-RAD-12-072-074 72-74 35.1 37.7 0.208 0.331  2527-68 NA GC-RAD-12-078-080 78-80 37.7 39.3 0.135 0.467  2527-70 NA GC-RAD-12-084-086 84-86 28.2 38.2 0.253 0.521  2527-72 NA GC-RAD-12-090-092 90-92 31.0 42.9 0.160 0.418				1		1	1			
Core 12 2527-56 NA GC-RAD-12-040-042 40-42 26.5 35.8 0.280 0.377 2527-57 NA GC-RAD-12-044-046 44-46 35.6 43.4 0.147 0.614 2527-58 NA GC-RAD-12-048-050 48-50 31.7 39.8 0.155 0.604 2527-60 NA GC-RAD-12-054-056 54-56 25.3 35.8 0.228 0.722 2527-62 NA GC-RAD-12-060-062 60-62 37.5 37.2 0.189 0.483 2527-64 NA GC-RAD-12-066-068 66-68 40.6 39.3 0.119 0.568 2527-66 NA GC-RAD-12-072-074 72-74 35.1 37.7 0.208 0.331 2527-68 NA GC-RAD-12-078-080 78-80 37.7 39.3 0.135 0.467 2527-70 NA GC-RAD-12-084-086 84-86 28.2 38.2 0.253 0.521 2527-72 NA GC-RAD-12-090-092 90-92 31.0 42.9 0.160 0.418										
2527-56     NA     GC-RAD-12-040-042     40-42     26.5     35.8     0.280     0.377       2527-57     NA     GC-RAD-12-044-046     44-46     35.6     43.4     0.147     0.614       2527-58     NA     GC-RAD-12-048-050     48-50     31.7     39.8     0.155     0.604       2527-60     NA     GC-RAD-12-054-056     54-56     25.3     35.8     0.228     0.722       2527-62     NA     GC-RAD-12-060-062     60-62     37.5     37.2     0.189     0.483       2527-64     NA     GC-RAD-12-066-068     66-68     40.6     39.3     0.119     0.568       2527-66     NA     GC-RAD-12-072-074     72-74     35.1     37.7     0.208     0.331       2527-68     NA     GC-RAD-12-078-080     78-80     37.7     39.3     0.135     0.467       2527-70     NA     GC-RAD-12-084-086     84-86     28.2     38.2     0.253     0.521       2527-72     NA     GC-RAD-12-090-092     90-92     31.0     42.9     0.160     0.418	2527-457	NA	GC-ORG-01-320-328	320-328	15.1	52.7	0.341	3.43		
2527-56     NA     GC-RAD-12-040-042     40-42     26.5     35.8     0.280     0.377       2527-57     NA     GC-RAD-12-044-046     44-46     35.6     43.4     0.147     0.614       2527-58     NA     GC-RAD-12-048-050     48-50     31.7     39.8     0.155     0.604       2527-60     NA     GC-RAD-12-054-056     54-56     25.3     35.8     0.228     0.722       2527-62     NA     GC-RAD-12-060-062     60-62     37.5     37.2     0.189     0.483       2527-64     NA     GC-RAD-12-066-068     66-68     40.6     39.3     0.119     0.568       2527-66     NA     GC-RAD-12-072-074     72-74     35.1     37.7     0.208     0.331       2527-68     NA     GC-RAD-12-078-080     78-80     37.7     39.3     0.135     0.467       2527-70     NA     GC-RAD-12-084-086     84-86     28.2     38.2     0.253     0.521       2527-72     NA     GC-RAD-12-090-092     90-92     31.0     42.9     0.160     0.418	Core 12									
2527-57       NA       GC-RAD-12-044-046       44-46       35.6       43.4       0.147       0.614         2527-58       NA       GC-RAD-12-048-050       48-50       31.7       39.8       0.155       0.604         2527-60       NA       GC-RAD-12-054-056       54-56       25.3       35.8       0.228       0.722         2527-62       NA       GC-RAD-12-060-062       60-62       37.5       37.2       0.189       0.483         2527-64       NA       GC-RAD-12-066-068       66-68       40.6       39.3       0.119       0.568         2527-66       NA       GC-RAD-12-072-074       72-74       35.1       37.7       0.208       0.331         2527-68       NA       GC-RAD-12-078-080       78-80       37.7       39.3       0.135       0.467         2527-70       NA       GC-RAD-12-084-086       84-86       28.2       38.2       0.253       0.521         2527-72       NA       GC-RAD-12-090-092       90-92       31.0       42.9       0.160       0.418		NA	GC-RAD-12-040-042	40-42	26.5	35.8	0.280	0.377		
2527-58     NA     GC-RAD-12-048-050     48-50     31.7     39.8     0.155     0.604       2527-60     NA     GC-RAD-12-054-056     54-56     25.3     35.8     0.228     0.722       2527-62     NA     GC-RAD-12-060-062     60-62     37.5     37.2     0.189     0.483       2527-64     NA     GC-RAD-12-066-068     66-68     40.6     39.3     0.119     0.568       2527-66     NA     GC-RAD-12-072-074     72-74     35.1     37.7     0.208     0.331       2527-68     NA     GC-RAD-12-078-080     78-80     37.7     39.3     0.135     0.467       2527-70     NA     GC-RAD-12-084-086     84-86     28.2     38.2     0.253     0.521       2527-72     NA     GC-RAD-12-090-092     90-92     31.0     42.9     0.160     0.418						I.				
2527-60     NA     GC-RAD-12-054-056     54-56     25.3     35.8     0.228     0.722       2527-62     NA     GC-RAD-12-060-062     60-62     37.5     37.2     0.189     0.483       2527-64     NA     GC-RAD-12-066-068     66-68     40.6     39.3     0.119     0.568       2527-66     NA     GC-RAD-12-072-074     72-74     35.1     37.7     0.208     0.331       2527-68     NA     GC-RAD-12-078-080     78-80     37.7     39.3     0.135     0.467       2527-70     NA     GC-RAD-12-084-086     84-86     28.2     38.2     0.253     0.521       2527-72     NA     GC-RAD-12-090-092     90-92     31.0     42.9     0.160     0.418	1									
2527-62     NA     GC-RAD-12-060-062     60-62     37.5     37.2     0.189     0.483       2527-64     NA     GC-RAD-12-066-068     66-68     40.6     39.3     0.119     0.568       2527-66     NA     GC-RAD-12-072-074     72-74     35.1     37.7     0.208     0.331       2527-68     NA     GC-RAD-12-078-080     78-80     37.7     39.3     0.135     0.467       2527-70     NA     GC-RAD-12-084-086     84-86     28.2     38.2     0.253     0.521       2527-72     NA     GC-RAD-12-090-092     90-92     31.0     42.9     0.160     0.418	1									
2527-64     NA     GC-RAD-12-066-068     66-68     40.6     39.3     0.119     0.568       2527-66     NA     GC-RAD-12-072-074     72-74     35.1     37.7     0.208     0.331       2527-68     NA     GC-RAD-12-078-080     78-80     37.7     39.3     0.135     0.467       2527-70     NA     GC-RAD-12-084-086     84-86     28.2     38.2     0.253     0.521       2527-72     NA     GC-RAD-12-090-092     90-92     31.0     42.9     0.160     0.418										
2527-66     NA     GC-RAD-12-072-074     72-74     35.1     37.7     0.208     0.331       2527-68     NA     GC-RAD-12-078-080     78-80     37.7     39.3     0.135     0.467       2527-70     NA     GC-RAD-12-084-086     84-86     28.2     38.2     0.253     0.521       2527-72     NA     GC-RAD-12-090-092     90-92     31.0     42.9     0.160     0.418				3						
2527-68 NA GC-RAD-12-078-080 78-80 37.7 39.3 0.135 0.467 2527-70 NA GC-RAD-12-084-086 84-86 28.2 38.2 0.253 0.521 2527-72 NA GC-RAD-12-090-092 90-92 31.0 42.9 0.160 0.418	1			1						
2527-70 NA GC-RAD-12-084-086 84-86 28.2 38.2 0.253 0.521 2527-72 NA GC-RAD-12-090-092 90-92 31.0 42.9 0.160 0.418										
2527-72 NA GC-RAD-12-090-092 90-92 31.0 42.9 0.160 0.418										
						1				
7.37.1=144 INA (TL.:KAD.::)/D9D.:D9X	2527-74	NA	GC-RAD-12-096-098	90-92 96-98	21.4	34.7	0.100	0.418		

Battelle Marine Sciences Laboratory 1529 West Sequim Bay Rd. Sequim, WA 98382 (360) 683-4151

### Cs-137 Results in Sediments GOWANUS

### Samples received 1/24-31/06

Results reported in disintegrations/minute/gram

PROJECT: 2527

PROJECT: 2.					Percent	Cs137	Cs 137	SRM	
BATTELLE	Core	SPONSOR	Depth	Dry Wt.	Dry Wt.	detection limit	dis/min/g	CERTIFIED VALUE	%RPD
CODE	ID	CODE	(cm)	(g)	(g)	(dis/min/g)	(dry wt.)	dis/min/g	
Core 12, cont	•		· ` ` · · · ·			8/		<u> </u>	
2527-76	NA	GC-RAD-12-102-104	102-104	23.4	33.0	0.225	0.797		
2527-78	NA	GC-RAD-12-108-110	108-110	3.39	25.9	1.176	1.40		
2527-80	NA	GC-RAD-12-114-116	114-116	24.9	33.0	0.187	0.483		
2527-82	NA	GC-RAD-12-120-122	120-122	21.7	31.3	0.323	0.630		
Core 21									
2527-122	NA	GC-RAD-21-102-104	102-104	44.0	48.7	0.169	0.704		
2527-124	NA	GC-RAD-21-108-110	108-110	46.7	49.1	0.153	0.705		
2527-128	NA	GC-RAD-21-120-122	120-122	46.7	49.1	0.106	0.889		
2527-132	NA	GC-RAD-21-132-134	132-134	48.4	53.3	0.157	0.898		
2527-134	NA	GC-RAD-21-138-140	138-140	45.0	64.5	0.113	1.01		
2527-136	NA	GC-RAD-21-144-146	144-146	59.9	54.7	0.113	0.669		
2527-458	NA	GC-ORG-21-150-160	150-160	16.5	48.6	0.432	1.39		
2527-437	NA	GC-SED-21B (7-8)	213-244	30.0	75.2	0.432	0.577		
Core 31									
2527-304	NA	GC-RAD-31-096-098	96-98	33.5	47.0	0.206	1.01		
2527-306	NA	GC-RAD-31-102-104	102-104	22.1	38.1	0.200			
2527-308	NA	GC-RAD-31-102-104 GC-RAD-31-108-110	102-104	23.0	36.3	0.323	1.10		
2527-308	NA	GC-RAD-31-108-110 GC-RAD-31-114-116	114-116	23.0 19.9		ŧ .	1.28		
2527-310	NA	GC-RAD-31-1120-122	120-122	29.9	36.3	0.337	1.45		
2527-312	NA	GC-RAD-31-126-128	120-122		36.9	0.177	0.957		
2527-314	NA	GC-RAD-31-120-128 GC-RAD-31-132-134	132-134	20.4	34.5	0.347	1.41		
2527-318	NA	GC-RAD-31-132-134 GC-RAD-31-138-140	132-134	24.4	35.0	0.198	1.17		
2527-310	NA	GC-RAD-31-136-140 GC-RAD-31-144-146		14.8	34.8	0.334	1.41		
2527-320 2527-426 R1	NA	GC-RAD-31-144-146 GC-RAD-31-150-160	144-146	19.1	32.4	0.354	1.44		
2527-426 R1	NA	GC-RAD-31-150-160 GC-RAD-31-150-160	150-160 150-160	13.5	37.9	0.281	0.548		***
2527-420 K2	NA	GC-RAD-31-170-180		13.5	37.9	0.350	0.350 U		NA
2527-427	NA	GC-RAD-31-170-180 GC-RAD-31-190-200	170-180	25.5	43.4	0.110	0.661		
2527-429	NA		190-200	15.9	43.8	0.260	1.73		
2527-430	NA	GC-RAD-31-210-220	210-220	15.2	50.6	0.262	1.39		
2527-430	NA	GC-RAD-31-230-240 GC-RAD-31-250-260	230-240	5.05	40.8	0.784	2.29		
2527-431	NA	GC-RAD-31-230-280 GC-RAD-31-270-280	250-260 270-280	4.57	45.4	0.868	1.85		
2527-432	NA	GC-RAD-31-270-280 GC-RAD-31-290-300		11.7	52.8	0.334	1.41		
2527-433 2527-434	NA	GC-RAD-31-290-300 GC-RAD-31-310-320	290-300	17.2	59.5	0.273	0.454		
2527-434	NA	GC-RAD-31-330-340	310-320 330-340	11.1 23.8	52.6 68.6	0.274 0.167	0.274 U 0.324		
C 07					- 3.0		3.0 <b>2</b> 1		
Core 87		00 p		_		_			
2527-156	NA	GC-RAD-87-066-068	66-68	30.7	42.7	0.167	1.68		
2527-158	NA	GC-RAD-87-072-074	72-74	24.4	43.6	0.227	0.732		
2527-160	NA	GC-RAD-87-078-080	78-80	40.5	56.5	0.130	0.768		
2527-162	NA	GC-RAD-87-084-086	84-86	32.7	44.1	0.231	1.09		
2527-164	NA	GC-RAD-87-090-092	90-92	32.6	44.9	0.151	0.690		
2527-166	NA	GC-RAD-87-096-098	96-98	25.2	44.5	0.096	0.646		
2527-168	NA	GC-RAD-87-102-104	102-104	30.9	42.4	0.163	0.696		
2527-170	NA	GC-RAD-87-108-110	108-110	33.0	42.7	0.213	1.12		
2527-172 R1	NA	GC-RAD-87-114-116	114-116	38.8	45.3	0.201	0.907		
2527-172 R2	NA	GC-RAD-87-114-116	114-116	38.8	45.3	0.195	0.960		6%
2527-174	NA	GC-RAD-87-120-122	120-122	33.6	45.0	0.166	1.15		

### Cs-137 Results in Sediments GOWANUS

### Samples received 1/24-31/06

Results reported in disintegrations/minute/gram

PROJECT: 2527

(360) 683-4151

PROJECT: 2.				<u> </u>	Percent	Cs137	Cs 137	SRM	
						detection		CERTIFIED	
BATTELLE	Core	SPONSOR	Depth	Dry Wt.	Dry Wt.	limit	dis/min/g	VALUE	%RPD
CODE	ID	CODE	(cm)	(g)	(g)	(dis/min/g)	(dry wt.)	dis/min/g	
Core 87, cont	•						- V	8	
2527-176	NA	GC-RAD-87-126-128	126-128	41.3	46.7	0.180	0.715		
2527-178	NA	GC-RAD-87-132-134	132-134	34.4	45.8	0.157	0.641		
2527-180	NA	GC-RAD-87-138-140	138-140	30.4	45.4	0.262	0.614		
2527-182	NA	GC-RAD-87-144-146	144-146	35.5	45.7	0.154	0.779		
2527-419	NA	GC-RAD-87-160-170	160-170	17.2	35.5	0.280	0.280 U		
2527-420	NA	GC-RAD-87-180-190	180-190	14.5	29.8	0.482	0.482 U		
2527-421	NA	GC-RAD-87-200-210	200-210	22.4	45.8	0.229	0.229 U		
2527-422	NA	GC-RAD-87-220-230	220-230	58.5	84.9	0.121	0.121 U		
2527-423	NA	GC-RAD-87-240-250	240-250	34.7	64.5	0.163	0.163 U		
Core 88									
2527-258	NA	GC-RAD-88-096-098	96-98	46.0	41.5	0.113	0.666		
2527-260	NA	GC-RAD-88-102-104	102-104	35.3	42.3	0.206	0.754		
2527-262	NA	GC-RAD-88-108-110	108-110	30.8	36.9	0.159	1.12		
2527-264	NA	GC-RAD-88-114-116	114-116	43.9	44.7	0.140	1.10		
2527-266	NA	GC-RAD-88-120-122	120-122	29.9	39.0	0.179	0.980		
2527-268	NA	GC-RAD-88-126-128	126-128	24.3	38.1	0.215	1.17		
2527-270	NA	GC-RAD-88-132-134	132-134	22.4	41.5	0.181	1.15		
2527-272	NA	GC-RAD-88-138-140	138-140	26.6	39.9	0.187	1.26		
2527-274	NA	GC-RAD-88-144-146	144-146	19.1	41.1	0.371	1.17		
2527-409	NA	GC-RAD-88-160-170	160-170	5.89	34.2	0.826	1.57		
2527-410 R1	NA	GC-RAD-88-180-190	180-190	11.4	38.6	0.587	2.55		
2527-410 R2	NA	GC-RAD-88-180-190	180-190	11.4	38.6	0.626	2.27		12%
2527-411	NA	GC-RAD-88-200-210	200-210	9.37	28.0	0.503	2.11		
2527-412	NA	GC-RAD-88-220-230	220-230	12.8	46.7	0.561	2.36		
2527-413	NA	GC-RAD-88-240-250	240-250	17.4	50.1	0.230	1.86		
2527-414	NA	GC-RAD-88-260-270	260-270	10.6	25.1	0.464	3.31		
2527-415	NA	GC-RAD-88-280-290	280-290	35.0	79.6	0.199	0.303		
2527-416	NA	GC-RAD-88-300-310	300-310	7.13	35.6	0.910	0.994		
2527-417	NA	GC-RAD-88-320-330	320-330	42.4	77.8	0.125	0.125 U		
2527-418	NA	GC-RAD-88-340-350	340-350	53.1	85.1	0.083	0.0828 U		
2527-438	NA	GC-SED-88 (15.9-16.9)	485-515	58.0	82.4	0.125	0.125 U		

U = less than or equal to calculated detection limit.

<sup>\* = %</sup> difference.

<sup>@ =</sup> RPD.

Project: Gowanus

Date:

31-Jan-06

Central File #:

2527

Balance:

11

Analyst:

JP/MM/TF/LSB

Matrix:

Sed

					-		
	Tare	Tare+Wet	Tare+Dry	Wet Weight	Day Majaht	0/ D=:	0/ 10/-4
Sample ID	Weight	1	,	_	Dry Weight	% Dry	% Wet
	(g)	Weight (g)	Weight (g)	(g)	(g)	Weight	Weight
1	30.253	152.167	102.787	121.914	72.534	59.50	40.50
2	31.142	215.070	177.802	183.928	146.660	79.74	20.26
2 3	30.215	213.196	177.377	182.981	147.162	80.42	19.58
4	30.250	126.685	91.232	96.435	60.982	63.24	36.76
5	30.416	180.796	148.257	150.380	117.841	78.36	21.64
6	30.140	192.010	161.161	161.870	131.021	80.94	19.06
7	30.436	150.145	104.880	119.709	74.444	62.19	37.81
8	30.291	178.603	145.380	148.312	115.089	77.60	22.40
9	30.334	131.206	81.535	100.872	51.201	50.76	49.24
10	30.078	164.882	127.842	134.804	97.764	72.52	27.48
11	30.975	153.571	125.963	122.596	94.988	77.48	22.52
12	30.247	118.837	87.492	88.590	57.245	64.62	35.38
13	30.124	170.700	141.481	140.576	111.357	79.21	20.79
14	29.750	104.030	54.862	74.280	25.112	33.81	66.19
15	30.174	125.001	79.211	94.827	49.037	51.71	48.29
17	29.895	167.717	140.333	137.822	110.438	80.13	19.87
19	29.554	168.840	135.998	139.286	106.444	76.42	23.58
21	30.179	160.135	133.281	129.956	103.102	79.34	20.66
23	30.130	152.013	105.097	121.883	74.967	61.51	38.49
25	30.114	121.857	77.275	91.743	47.161	51.41	48.59
27	29.569	166.634	139.114	137.065	109.545	79.92	20.08
29	29.518	117.898	79.079	88.380	49.561	56.08	43.92
31	30.777	141.709	107.166	110.932	76.389	68.86	31.14
33	29.965	163.530	133.141	133.565	103.176	77.25	22.75
35	29.983	109.446	80.400	79.463	50.417	63.45	36.55
37	29.714	132.958	94.980	103.244	65.266	63.22	36.78
39	29.711	115.679	73.907	85.968	44.196	51.41	48.59
41 43	29.712	159.635	113.670	129.923	83.958	64.62	35.38
	29.498	101.239	71.161	71.741	41.663	58.07	41.93
45 46	29.691 29.915	145.784	117.356	116.093	87.665	75.51	24.49
46 47	29.915	106.214	56.684	76.299	26.769	35.08	64.92
48		116.014	61.577	86.070	31.633	36.75	63.25
46 49	31.056 29.738	116.147 115.708	59.094	85.091	28.038	32.95	67.05
<del>49</del> 50	30.383	135.582	62.539 71.304	85.970	32.801	38.15	61.85
50 51	30.996			105.199	40.921	38.90	61.10
52	30.431	128.333 108.020	61.251	97.337	30.255	31.08	68.92
53	30.431	126.777	54.296 62.273	77.589 96.364	23.865	30.76	69.24
54	29.853	113.947	61.586	84.094	31.860	33.06	66.94
55	30.250	109.267	59.406	79.017	31.733 29.156	37.74	62.26
56	30.370	112.781	59.400 59.845	79.017 82.411	29.156 29.475	36.90 35.77	63.10 64.23
57	30.980	119.909	69.551	88.929	29.475 38.571	35.77 43.37	56.63
58	30.190	117.481	64.921	87.291	34.731	43.37 39.79	
60	31.016	110.106	59.321	79.090	28.305	39.79 35.79	60.21 64.21
62	30.291	139.075	70.763	108.784	40.472	35.79 37.20	62.80
64	30.346	141.530	74.001	111.184	43.655	37.20 39.26	60.74
66	31.169	132.212	69.259	101.043	38.090	39.20 37.70	62.30
68	30.128	133.781	70.871	103.653	40.743	39.31	60.69
	29.968	111.680	61.186	81.712	31.218	38.20	61.80
70			0,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	U 1.7 14m	U1.210	00.20	01.00
			64,186	79.303	34 009	42 88	57 12
70 72 74	30.177 29.919	109.480 100.373	64.186 54.363	79.303 70.454	34.009 24.444	42.88 34.69	57.12 65.31

Project:

Gowanus

Date:

31-Jan-06

Central File #:

2527

Balance:

11

Analyst:

JP/MM/TF/LSB

Matrix:

x: Sed

Sample ID	Tare Weight	Tare+Wet	Tare+Dry	Wet Weight	Dry Weight	% Dry	% Wet
	(g)	Weight (g)	Weight (g)	(g)	(g)	Weight	Weight
78	30.313	66.502	39.702	36.189	9.389	25.94	74.06
80	29.920	114.544	57.804	84.624	27.884	32.95	67.05
32	31.039	110.044	55.772	79.005	24.733	31.31	68.69
34	29.750	104.030	54.862	74.280	25.112	33.81	66.19
36	30.464	112.771	58.274	82.307	27.810	33.79	66.21
38	30.392	111.158	58.009	80.766	27.617	34.19	65.81
90	30.939	105.917	55.186	74.978	24.247	32.34	67.66
92	29.840	103.961	62.516	74.121	32.676	44.08	55.92
3	29.971	105.843	64.835	75.872	34.864	45.95	54.05
14	29.986	100.973	64.420	70.987	34.434	48.51	51.49
95	30.769	117.010	70.459	86.241	39.690	46.02	53.98
96	29.696	130.288	78.087	100.592	48.391	48.11	51.89
7	29.729	120.369	73.915	90.640	44.186	48.75	51.25
8	29.583	132.376	78.643	102.793	49.060	47.73	52.27
9	29.543	119.585	71.517	90.042	41.974	46.62	53.38
00	30.828	146.776	87.376	115.948	56.548	48.77	51.23
01	30.865	145.491	86.233	114.626	55.368	48.30	51.70
02	30.112	117.752	92.084	87.640	61.972	70.71	29.29
03	30.107	128.129	75.140	98.022	45.033	45.94	54.06
04	30.037	114.647	85.248	84.610	55.211	65.25	34.75
06	29.746	121.145	73.767	91.399	44.021	48.16	51.84
08	30.126	133.129	86.554	103.003	56.428	54.78	45.22
10	30.163	135.961	84.667	105.798	54.504	51.52	48.48
12	30.693	143.449	87.482	112.756	56.789	50.36	49.64
14	29.573	136.655	89.381	107.082	59.808	55.85	44.15
16	29.540	148.699	89.305	119.159	59.765	50.16	49.84
18	30.862	140.332	86.156	109.470	55.294	50.51	49.49
20	29.952	128.187	79.912	98.235	49.960	50.86	49.14
22	30.258	126.835	77.273	96.577	47.015	48.68	51.32
24	30.239	139.684	85.517	109.445	55.278	50.51	49.49
26	30.217	125.312	83.324	95.095	53.107	55.85	44.15
28	30.321	131.525	80.017	101.204	49.696	49.10	50.90
30	30.324	134.077	99.826	103.753	69.502	66.99	33.01
32	29.885	126.211	81.260	96.326	51.375	53.33	46.67
34	29.744	104.184	77.742	74.440	47.998	64.48	35.52
36	29.596	144.592	92.542	114.996	62.946	54.74	45.26
38	31.065	83.621	45.485	52.556	14.420	27.44	72.56
39	29.823	85.927	46.882	56.104	17.059	30.41	69.59
40	30.845	73.851	41.957	43.006	11.112	25.84	74.16
41	29.619	83.539	44.431	53.920	14.812	27.47	72.53
42	30.003	84.696	47.704	54.693	17.701	32.36	67.64
43	30.216	80.043	45.315	49.827	15.099	30.30	69.70
44	30.134	70.879	45.595	40.745	15.461	37.95	62.05
45	29.942	77.462	47.179	47.520	17.237	36.27	63.73
46	30.215	62.528	43.311	32.313	13.096	40.53	59.47
47	29.776	58.652	41.611	28.876	11.835	40.99	59.01
48	29.995	82.178	49.757	52.183	19.762	37.87	62.13
49	30.106	87.152	49.775	57.046	19.669	34.48	65.52
50	30.045	89.425	53.714	59.380	23.669	39.86	60.14
52	30.037	89.598	54.707	59.561	24.670	41.42	58.58
54	30.885	91.593	56.456	60.708	25.571	42.12	57.88
56	30.151	109.230	63.900	79.079	33.749	42.68	57.32

Project:

Gowanus

Date:

31-Jan-06

Central File #:

2527

Balance:

Analyst:

JP/MM/TF/LSB

Matrix:

11 Sed

		1	I	I			
	Tare	Tare+Wet	Tare+Dry	Wet Weight	Dry Weight	% Dry	% Wet
Sample ID	Weight	Weight (g)	Weight (g)	(g)	(g)	Weight	Weight
	(g)						
158	30.231	93.141	57.674	62.910	27.443	43.62	56.38
160	29.659	95.836	58.439	66.177	28.780	43.49	56.51
162	30.159	111.179	65.873	81.020	35.714	44.08	55.92
164	30.118	109.497	65.754	79.379	35.636	44.89	55.11
166	29.630	93.058	57.832	63.428	28.202	44.46	55.54
168	29.982	109.891	63.824	79.909	33.842	42.35	57.65
170	29.715	113.904	65.682	84.189	35.967	42.72	57.28
172	29.595	122.007	71.442	92.412	41.847	45.28	54.72
174 176	29.871	111.219	66.502	81.348	36.631	45.03	54.97
176 178	29.898 29.715	124.666	74.172	94.768	44.274	46.72	53.28
180	30.440	111.350 104.117	67.066 63.877	81.635	37.351	45.75	54.25
182	30.201	114.503	68.718	73.677 84.302	33.437 38.517	45.38 45.69	54.62
222	30.186	126.075	101.674	95.889	71.488	74.55	54.31 25.45
230	29.897	89.464	48.964	59.567	19.067	32.01	67.99
231	29.849	114.301	58.413	84.452	28.564	33.82	66.18
232	30.375	106.436	57.865	76.061	27.490	36.14	63.86
233	29.748	121.339	59.637	91.591	29.889	32.63	67.37
234	31.051	112.334	59.328	81.283	28.277	34.79	65.21
235	30.276	114.943	55.317	84.667	25.041	29.58	70.42
236	31.071	133.971	73.752	102.900	42.681	41.48	58.52
237	30.037	101.314	54.213	71.277	24.176	33.92	66.08
238	30.901	107.255	60.860	76.354	29.959	39.24	60.76
239	30.274	90.443	48.981	60.169	18.707	31.09	68.91
240	29.748	105.037	57.438	75.289	27.690	36.78	63.22
241	29.967	93.217	53.333	63.250	23.366	36.94	63.06
242	30.280	112.745	62.312	82.465	32.032	38.84	61.16
244	30.399	118.828	59.730	88.429	29.331	33.17	66.83
246	29.970	128.845	63.258	98.875	33.288	33.67	66.33
248	30.220	126.650	67.135	96.430	36.915	38.28	61.72
250	29.855	99.892	59.439	70.037	29.584	42.24	57.76
252	30.275	110.690	63.910	80.415	33.635	41.83	58.17
254	29.876	139.765	86.386	109.889	56.510	51.42	48.58
256	20.094	129.733	71.038	109.639	50.944	46.47	53.53
258	30.210	148.408	79.218	118.198	49.008	41.46	58.54
260	29.667	120.164	67.942	90.497	38.275	42.29	57.71
262	30.032	121.786	63.879	91.754	33.847	36.89	63.11
264	30.351	135.102	77.207	104.751	46.856	44.73	55.27
266	31.078	115.495	64.001	84.417	32.923	39.00	61.00
268	30.269	101.921	57.542	71.652	27.273	38.06	61.94
270	30.942	92.190	56.338	61.248	25.396	41.46	58.54
272	30.316	104.530	59.893	74.214	29.577	39.85	60.15
274	30.373	84.080	52.445 52.474	53.707	22.072	41.10	58.90
276 277	29.857 29.877	102.859 120.028	53.174	73.002	23.317	31.94	68.06
278	30.040	120.028	69.212 75.970	90.151 96.246	39.335 45.030	43.63 47.72	56.37
279	30.397	118.690	75.970 70.793		45.930 40.306	47.72 45.75	52.28 54.25
280	29.962	125.449	70.793 71.526	88.293 95.487	40.396 41.564	45.75 43.53	54.25 56.47
281	30.251	142.757	71.326 78.351	95.467 112.506	41.50 <del>4</del> 48.100	43.53 42.75	56.47 57.25
282	30.417	116.883	68.255	86.466	46.100 37.838	42.75 43.76	56.24
283	30.030	135.646	74.935	105.616	44.905	42.52	57.48
284	30.109	149.545	91.558	119.436	61.449	51.45	48.55
·	55.100	1 10.040	01.000	110.400	01.770	J 1.70	70.00

Project:

Gowanus

Date:

31-Jan-06

Central File #:

2527

Balance:

11

Analyst:

JP/MM/TF/LSB

Matrix:

Sed

Sample ID	Tare Weight (g)	Tare+Wet Weight (g)	Tare+Dry Weight (g)	Wet Weight (g)	Dry Weight (g)	% Dry Weight	% Wet Weight
285	29.827	147.555	95.489	117.728	65.662	55.77	44.23
286	29.849	111.280	69.657	81.431	39.808	48.89	51.11
287	29.765	150.273	97.793	120.508	68.028	46.69 56.45	43.55
288	31.084	133.987	88.744	102.903	57.660	56.03	43.55 43.97
290	30.157	131.530	88.188	102.903	58.031	57.25	43.97 42.75
292	31.059	135.665	89.469	104.606	58.410	57.25 55.84	42.75 44.16
294	31.123	116.408	68.402	85.285	37.279	43.71	56.29
296	30.170	145.224	89.547	115.054	59.377	51.61	48.39
298	29.934	129.094	79.026	99.160	49.092	49.51	50.49
300	30.381	140.336	84.484	109.955	54.103	49.20	50. <del>4</del> 9 50.80
302	29.852	141.971	86.739	112.119	56.887	50.74	49.26
302 304	30.312	108.060	66.865	77.748	36.553	47.01	52.99
30 <del>4</del> 306	30.197	95.937	55.255	65.740	25.058	38.12	
308	30.126	101.656	56.122	71.530	25.996	36.34	61.88
310	29.754	92.816	52.638	63.062		36.29	63.66
312	31.078	120.221	63.949	89.143	22.884 32.871	36.29 36.87	63.71 63.13
314	30.931	98.794	54.315	67.863	23.384	34.46	65.54
316	29.709	108.055	57.118	78.346	23.30 <del>4</del> 27.409	34.40	
318	30.389	81.575	48.202	51.186	17.813		65.02
320	29.948	98.387	52.108	68.439	22.160	34.80 32.38	65.20 67.62
368	29.744	104.184	77.742	74.440	47.998	32.36 64.48	
369	30.870	93.249	75.720	62.379	44.850		35.52
370	30.466	95.2 <del>4</del> 9 165.140	123.963	134.674	93.497	71.90 69.42	28.10
370 371	30.357	140.016	107.335	109.659	76.978	70.20	30.58
372	29.679	133.545	107.333	103.866	70.978 77.948	75.05	29.80
373	29.979	173.200	142.889	143.221	112.910	78.84	24.95
374	29.842	159.449	134.137	129.607	104.295	70.0 <del>4</del> 80.47	21.16
37 <del>4</del> 375	29.906	131.660	112.046	101.754	82.140	80.72	19.53 19.28
376	30.886	107.351	92.476	76.465	61.590	80.72	
377 377	29.883	122.890	102.300	93.007	72.417		19.45
378	30.331	111.510				77.86	22.14
379	30.285	116.216	93.274 97.226	81.179 85.931	62.943 66.941	77.54 77.90	22.46
380	30.123	104.953		74.830			22.10
382	29.848	86.653	89.643		59.520	79.54	20.46
384	30.469	125.424	72.040 96.672	56.805	42.192	74.28	25.72
386	30.393	117.578	81.087	94.955	66.203	69.72	30.28
388	31.036	117.576	86.629	87.185 87.240	50.694	58.15	41.85
390	30.476	115.981	80.876	87.219	55.593	63.74	36.26
392	30.470			85.505	50.400	58.94	41.06
394		131.038	88.122 117.457	100.848	57.932	57.44	42.56
396	30.268 30.060	161.151 131.603	117.457 98.064	130.883	87.189 68.004	66.62	33.38
398 398				101.543	68.004	66.97	33.03
100	30.366 29.948	120.882	97.454 88.280	90.516	67.088	74.12	25.88
400 402	30.405	113.147 180.861	88.280 148.939	83.199 150.456	58.332	70.11	29.89
102 104	30.405	123.082		150.456	118.534	78.78	21.22
404 406	29.869		82.272 86.247	91.975	51.165	55.63	44.37
	30.349	131.189	86.247 97.462	101.320	56.378	55.64	44.36
408 400		154.566		124.217	67.113	54.03	45.97 65.70
409 410	18.067	52.759 55.385	29.944	34.692	11.877	34.24	65.76
	18.088	55.385 63.370	32.474	37.297	14.386	38.57	61.43
411 412	18.107 18.099	62.270 51.875	30.479 33.889	44.163	12.372	28.01	71.99
	16 099	อา 8/5	33 889	33.776	15.790	46.75	53.25

Project:

Gowanus

Date:

31-Jan-06

Central File #:

2527

Balance:

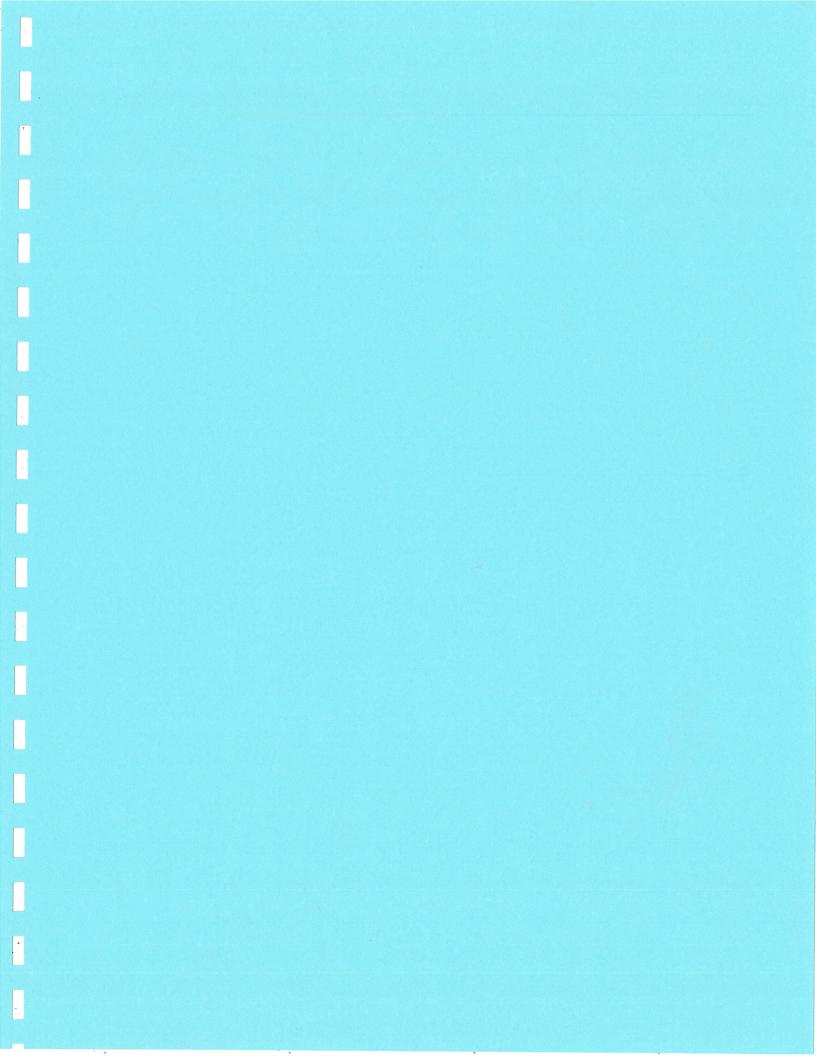
11

Analyst:

JP/MM/TF/LSB

Matrix: Sed

Sample ID	Tare	Tare+Wet	Tare+Dry	Wet Weight	Dry Weight	% Dry	% Wet
Sample ID	Weight (g)	Weight (g)	Weight (g)	(g)	(g)	Weight	Weight
14	18.154	72.448	31.779	54.294	13.625	25.09	74.91
15	18.167	65.948	56.211	47.781	38.044	79.62	20.38
16	18.111	46.589	28.236	28.478	10.125	35.55	64.45
17	18.311	80.591	66.755	62.280	48.444	77.78	22.22
18	18.004	83.981	74.126	65.977	56.122	85.06	14.94
19	18.230	75.170	38.445	56.940	20.215	35.50	64.50
20	18.009	76.892	35.563	58.883	17.554	29.81	70.19
21	17.980	73.536	43.426	55.556	25.446	45.80	54.20
22	18.022	90.425	79.488	72.403	61.466	84.89	15.11
23	18.017	76.532	55.769	58.515	37.752	64.52	35.48
24	18.330	105.525	85.420	87.195	67.090	76.94	23.06
25	18.349	92.493	76.093	74.144	57.744	77.88	22.12
26	1.243	3.951	2.268	2.708	1.025	37.85	62.15
27 R1	1.253	8.696	4.485	7.443	3.232	43.42	56.58
27 R2	1.244	6.637	3.656	5.393	2.412	44.72	55.28
28	1.267	8.777	4.557	7.510	3.290	43.81	56.19
29	1.264	6.994	4.164	5.730	2.900	50.61	49.39
30	1.258	4.176	2.449	2.918	1.191	40.82	59.18
31	1.256	5.932	3.380	4.676	2.124	45.42	54.58
32	1.247	10.058	5.896	8.811	4.649	52.76	47.24
33	1.270	5.432	3.745	4.162	2.475	59.47	40.53
34	1.250	6.162	3.832	4.912	2.582	52.57	47.43
35	1.259	7.554	5.575	6.295	4.316	68.56	31.44
36	30.140	91.525	83.000	61.385	52.860	86.11	13.89
37	30.105	82.585	69.560	52.480	39.455	75.18	24.82
38	29.593	115.365	100.288	85.772	70.695	82.42	17.58
39	29.854	95.570	72.462	65.716	42.608	64.84	35.16
40	29.655	58.966	43.974	29.311	14.319	48.85	51.15
41	30.123	76.744	48.685	46.621	18.562	39.81	60.19
42	30.143	67.009	50.187	36.866	20.044	54.37	45.63
43	29.991	77.670	60.715	47.679	30.724	64.44	35.56
44	29.877	58.519	43.606	28.642	13.729	47.93	52.07
45	30.153	60.782	47.440	30.629	17.287	56.44	43.56
46	29.918	59.854	47.169	29.936	17.251	57.63	42.37
47	30.270	58.381	44.816	28.111	14.546	51.74	48.26
48	30.275	57.230	45.064	26.955	14.789	54.87	45.13
49	29.976	61.259	45.811	31.283	15.835	50.62	49.38
50	30.442	63.954	49.548	33.512	19.106	57.01	42.99
51	30.253	61.032	47.854	30.779	17.601	57.19	42.81
52	30.291	60.568	49.702	30.277	19.411	64.11	35.89
53	29.875	83.698	71.773	53.823	41.898	77.84	22.16
54	30.247	59.688	44.826	29.441	14.579	49.52	50.48
55	29.850	64.060	44.768	34.210	14.918	43.61	56.39
56	31.092	61.674	46.811	30.582	15.719	51.40	48.60
57	30.431	59.045	45.522	28.614	15.091	52.74	47.26
58	31.064	74.290	52.078	43.226	21.014	48.61	51.39



Central F		Sample No(s):	1-149	Project Manager:	Buncher
* TO BE CO	OMPLETED BY PRO	JECT MANAGER (pri	or to arrival when po	ssible)	
	Matrix: S	edment	WP#	W75789	
	<del></del>	riect (requires high le	evel sample tracking pr		
	K Filter Sample			w Hard the same and	
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Entire sample	Hålf of samp	le
	Special instru	ctions:	be weighed and placed	in ultralow temp freezer	(Lab# 130)
Sample P	reservation Instr	uctions:			
Date 7	To Archive:		Date To Dispose:	All Ams	
TO BE CO	DMPLETED UPON	SAMPLE ARRIVAL	/LOG-TN		
Yes No		te in Appropriate Bo			
	<del>7/1</del> (	custody seal present?			
	Was th	ie custody seal intact?	•		
	Was co	oler(s) temperature(s	) within acceptable ran	nge of 4±2°C? 1-9=	3 #3-52 °C
. 77		ltiple coolers, note te		#2-11,2	#4-4.7 °C
PAH L	Was Pr Comr	oject Manager notifie nent/Remedy:	d of any custody/login	discrepancies (cooler tem	ip, sponsor codes, etc)?
27/	Were o	II chain of custody for	ms signed and dated?		_
- and	/ 1 C	amples filtered at MS			
Sample cond	ition(s):	Acceptable	Other (explain):	temp out	
Container ty	pe:	Teflon Poly G	iss (Spex	Other:	
Notes:				<u>- 127,</u>	
Completed B	The state of the s	Hah	Da	te/Time: 01/25/06	1100
SAMPLE PR	ESERVATION				7700
	le(s) were preserved	d at MSL			
Samp	le(s) were preserved	d prior to arrival at M	SL (noted on CoC / Sar	nple / per PM Instruction	`
Rando	mpH checked for ~	10% of samples (use o		uple IDs:	)
			l meter and record on		
If preservation	on necessary, recor	'd Acid Lot#	7	, , , , , , , , , , , , , , , , , , , ,	
Туре:	0.2% HNO3	Notes	:		
	0.5% HCl (Hg sam	ples) Notes			-
The state of the s	Refrigerate/Free	Notes	11020 VIOS	& outside	fallo (see login
	Other	Notes		1	falls (see login
Completed By	1 Din	Sahon	Date	1/Time: 01/25/06	(130)

(SOP#: MSL-A-001 & MSL-A-002)

Pacific Northwest Division Putting Technology To Work lest Sequim Bay Road Sciences Laboratory Washington 98382

Project Manager: Linda Bingler		Project Name: GEI Cores	es		-			Pac	Pacific Northwest Division
Shipment Method: Fed Ex overnight		Project Manager: Linga bi	ngler -3627/360-460-7000		s 	lest	Parameters	Mai 152	rine Sciences Laborat
Shipment Method: Fed Ex overnight   Fed Ex overni					ner		)	Sec	luim, Washington 98
Preservation:		Shipment Method: Fed Ex	overnight		taiı		1/00/1		
Field Sample ID         Collection Date/Time         Matrix         2         Cs137           &C. RAD-ol- bbb-oo2         1/33/o/c         sediment         1         1         2527-1           &C. RAD-ol- bbb-oo2         1/33/o/c         sediment         1         1         2527-1           &C. RAD-ol- bbb-oo2         1/33/o/c         sediment         1         1         2527-2           &C. RAD-ol- bbb-oo2         1/33/o/c         sediment         1         1         2527-3           &C. RAD-ol- bb-oo2         sediment         1         1         1         2527-3           &C. RAD-ol- bb-oo3         sediment         1         1         1         2527-5           &C. RAD-ol- bb-oo3         sediment         1         1         2527-6           &C. RAD-ol- bb-oo3         sediment         1         1         2527-7           &C. RAD-ol- bb-oo3         sediment         1         1         2527-8           &C. RAD-ol- bb-oo3         sediment         1         1         2527-9           &C. RAD-ol- bb-oo3         sediment         1         1         2527-1           &C. RAD-ol- bb-oo3         sediment         1         1         2527-1           &C. R		Preservation: Ice			on	Pb210 (	<del>Jrganics</del>		
Field Sample ID         Collection Date/Time         Matrix         2         Laboratory ID           6.C. RAD-1-050-002         1/33/5 C         sediment         1         1         2527-1           6.C. RAD-1-050-002         1/33/5 C         sediment         1         1         2527-2           6.C. RAD-1-050-003         sediment         1         1         2527-3           6.C. RAD-1-050-018         sediment         1         1         2527-3           6.C. RAD-1-050-02         sediment         1         1         2527-4           6.C. RAD-1-050-030         sediment         1         1         2527-6           6.C. RAD-1-108-030         sediment         1         1         2527-7           6.C. RAD-1-108-030         sediment         1         1         2527-8           6.C. RAD-1-108-030         sediment         1         1         2527-9           6.C. RAD-1-108-030         sediment         1         1         2527-1           6.C. RAD-1-108-039         sediment         1         1         2527-1           6.C. RAD-1-108-039         sediment         1         1         2527-1           6.C. RAD-1-108-039         sediment         1         1					f C	Cs13/			
Field Sample ID         Date/Time         Matrix         ≥         Laboratory ID           GC-RAD-I-1000-002         1/33 /b /b         sediment         1         2527-1           QC-RAD-I-1000-006         sediment         1         1         2527-2           QC-RAD-I-1000-006         sediment         1         1         2527-2           QC-RAD-I-102-009         sediment         1         1         2527-3           QC-RAD-I-030-032         sediment         1         1         2527-4           QC-RAD-I-030-032         sediment         1         1         2527-5           QC-RAD-I-030-039         sediment         1         1         2527-7           QC-RAD-I-030-039         sediment         1         1         2527-8           QC-RAD-I-030-039         sediment         1         1         2527-9           QC-RAD-I-030-039         sediment         1         1         2527-9           QC-RAD-I-030-039         sediment         1         1         2527-1           QC-RAD-I-030-039         sediment         1         1         2527-1           QC-RAD-I-030-030-030         sediment         1         1         2527-1           QC-RAD-I-030-030-030			Collection		o. of		<del></del>		
GL-RAD-ol-box-oo2       1/31/ole       sediment       1       1       2527-1         GL-RAD-ol-box-oac       sediment       1       1       2527-2         GL-RAD-ol-box-oac       sediment       1       1       2527-2         GL-RAD-ol-box-oac       sediment       1       1       2527-3         GL-RAD-ol-bu-oac       sediment       1       1       2527-4         GL-RAD-ol-bu-oac       sediment       1       1       2527-5         GL-RAD-ol-ba-oac       sediment       1       1       2527-6         GL-RAD-ol-ba-oac       sediment       1       1       2527-8         GL-RAD-ol-ba-oac       sediment       1       1       2527-8         GL-RAD-ol-ba-oac       sediment       1       1       2527-9         GL-RAD-ol-ba-oac       sediment       1       1       2527-10         GL-RAD-ol-ba-oac       sediment       1       1       2527-11         GL-RAD-ol-ba-oac       sediment       1       1       2527-12         GL-RAD-ol-ba-oac       sediment       1       1       2527-13         GL-RAD-ol-ba-oac       sediment       1       1       2527-14         GL-RAD-ol-ba-oac<	Line	Field Sample ID	Date/Time	Matrix	No			Laboratory ID	
&C-PAD-bi-Dox-sob         sediment         /         /         2527-2           &V-PAD-bi-Dox-sol/         sediment         /         /         2527-3           &V-PAD-bi-Di-bi-sol/         sediment         /         /         2527-4           &V-PAD-bi-Di-bi-sol/         sediment         /         /         2527-5         2527-5           &V-PAD-bi-Di-bi-sol/         sediment         /         /         /         2527-6         2527-7           &V-PAD-bi-Di-bi-sol/         sediment         /         /         /         /         2527-8           &V-PAD-bi-bi-sol/         sediment         /         /         /         /         2527-8           &V-PAD-bi-bi-sol/         sediment         /         /         /         /         2527-8           &V-PAD-bi-bi-sol/         sediment         /         /         /         /         2527-8           &V-PAD-bi-bi-bi-sol/         sediment         /         /         /         /         2527-10           &V-PAD-bi-bi-sol/         sediment         /         /         /         /         2527-11           &V-PAD-bi-bi-sol/         sediment         /         /         /         /         2527-13 <td></td> <td>GL-RAD-01-000-002</td> <td>1/22/06</td> <td>sediment</td> <td>,</td> <td>/_/</td> <td></td> <td>2527-1</td> <td></td>		GL-RAD-01-000-002	1/22/06	sediment	,	/_/		2527-1	
6/1-RAD-61-008-010       sediment       1       1       2527-3         6/1-RAD-61-03-014       sediment       1       1       2527-4         6/1-RAD-61-03-012       sediment       1       1       2527-5         6/1-RAD-61-03-012       sediment       1       1       2527-6         6/1-RAD-61-03-030       sediment       1       1       2527-7         6/1-RAD-61-03-030       sediment       1       1       2527-8         6/1-RAD-61-03-030       sediment       1       1       1       2527-8         6/1-RAD-61-03-03-034       sediment       1       1       1       2527-8         6/1-RAD-61-054-033       sediment       1       1       1       2527-10         6/1-RAD-61-054-034       sediment       1       1       1       2527-11         6/1-RAD-61-054-034       sediment       1       1       2527-12       2527-13         6/1-RAD-61-054-054       sediment       1       1       2527-13       2527-14         6/1-RAD-61-054-054       sediment       1       1       2527-13       2527-14	2	GL-RAD-01-DOX-006		sediment	\ 	//		2527-2	
&C-PAD-o1-040-018       sediment       1       1       2527-4         &C-PAD-o1-040-018       sediment       1       1       2527-5       2527-5         &C-PAD-o1-030-032       sediment       1       1       2527-6       2527-7         &C-PAD-01-038-030       sediment       1       1       2527-8       2527-8         &C-PAD-01-033-034       sediment       1       1       2527-8       2527-9         &C-PAD-01-034-032       sediment       1       1       2527-9       2527-10         &C-PAD-01-034-042       sediment       1       1       2527-11         &C-PAD-01-048-050       sediment       1       1       2527-12         &C-PAD-01-053-054       sediment       1       1       2527-13	ω	61-1290-10-008-010		sediment	`			2527-3	
GC-PAD-01-016-018       sediment       1       1       2527-5         GL-PAD-01-030-032       sediment       1       1       2527-6         GL-PAD-01-034-034       sediment       1       1       2527-7         GL-PAD-01-033-034       sediment       1       1       2527-8         GL-PAD-01-033-034       sediment       1       1       2527-8         GL-PAD-01-034-035       sediment       1       1       2527-9         GL-PAD-01-034-0342       sediment       1       1       2527-10         GL-PAD-01-040-042       sediment       1       1       2527-11         GL-PAD-01-048-035       sediment       1       1       2527-12         GL-PAD-01-048-035       sediment       1       1       2527-13         GL-PAD-01-048-035       sediment       1       1       2527-13         GL-PAD-01-053-054       sediment       1       1       2527-13         GL-PAD-01-054-055       sediment       1       1       2527-15	4	W-RAD-01-42-014		sediment	,	,		2527-4	
&L-RAN-ol-030-032       sediment       I       I       2527-6         &L-RAN-ol-034-034       sediment       I       I       2527-7         &L-RAN-ol-038       sediment       I       I       2527-8         &L-RAN-ol-04-042       sediment       I       I       2527-9         &L-RAN-ol-040-042       sediment       I       I       2527-10         &L-RAN-ol-044-041       sediment       I       I       2527-11         &L-RAN-ol-048-050       sediment       I       I       2527-12         &L-RAN-ol-054-051       sediment       I       I       2527-13	5	GC-RAD-01-016-018		sediment	,	/		2527-5	
GC-PAND-01-034-036         sediment         I         I         2527-7           GC-PAND-01-038-030         sediment         I         I         2527-8           GC-PAND-01-032-034         sediment         I         I         2527-9           GC-PAND-01-034-038         sediment         I         I         2527-10           GC-PAND-01-044-04C         sediment         I         I         2527-11           GC-PAND-01-048-050         sediment         I         I         I         2527-12           GC-PAND-01-053-054         sediment         I         I         I         2527-13           GC-PAND-01-054-055         sediment         I         I         I         2527-13	6	al-RAD-01-020-022		sediment	/			2527-6	
(L-1/2A)-01-532-536       sediment       I       I       2527-8         (L-1/2A)-01-532-534       sediment       I       I       2527-9         (L-1/2A)-01-540-533       sediment       I       I       2527-10         (L-1/2A)-01-540-642       sediment       I       I       2527-11         (L-1/2A)-01-548-540       sediment       I       I       2527-12         (L-1/2A)-01-548-550       sediment       I       I       2527-13         (L-1/2A)-01-544-554       sediment       I       I       I       2527-14         (L-1/2A)-01-544-554       sediment       I       I       I       2527-13         (L-1/2A)-01-544-554       sediment       I       I       I       2527-15	7	ac-120-01-024-026		sediment	/			2527-7	
GL-RAD-DI-532-534       sediment       I       I       2527-9         GL-RAD-51-D36-33       sediment       I       I       2527-10         GL-RAD-51-D40-542       sediment       I       I       2527-11         GL-RAD-51-D44-542       sediment       I       I       2527-12         GL-RAD-51-D44-543       sediment       I       I       2527-13         GL-RAD-51-54-554       sediment       I       I       2527-14         GL-RAD-51-54-554       sediment       I       I       2527-15	8	al-RAD-01-078-030		sediment	_			2527-8	
CL-IRAD-01-D96-033       sediment       I       1       2527-10         CL-IRAD-01-D40-042       sediment       I       I       2527-11         CL-IRAD-01-D48-040       sediment       I       I       2527-12         CL-IRAD-01-D48-050       sediment       I       I       2527-13         CL-IRAD-01-D59-D54       sediment       I       I       2527-14         CL-IRAD-01-D59-D54       sediment       I       I       2527-15	1	GC-RAD-DI-632-034		sediment	_	,		2527-9	
G(1- p(M)-61-640-642)       sediment       1       1       2527-11         G(1- p(M)-61-644)       sediment       1       1       2527-12         G(1- p(M)-61-644)       sediment       1       1       2527-13       4         G(1- p(M)-61-654-654)       sediment       1       1       2527-14       4         G(1- p(M)-61-654-654)       sediment       1       1       2527-15	1	Cl-RAD-01-086-038		sediment		_		2527-10	
CL-RAD-b1-b44-b46         sediment         I         2527-12           CL-RAD-b1-b48-b50         sediment         I         2527-13           CL-RAD-b1-b54-b54         sediment         I         2527-14         #           CL-RAD-b1-b54-b56         sediment         I         I         2527-15	1	G1-12MD-01-040-042		sediment		/		2527-11	
QC- RAD-01-648-050       sediment       I       1       2527-13         QC- RAD-01-654-054       sediment       I       1       2527-14       #         QC-RAD-01-654-054       sediment       I       I       2527-15	1	C1-RAD-07-044-046		sediment	_	1		2527-12	
Cl-RAD-DI-053-054         sediment         I         2527-14         #           Cl-RAD-DI-054-054         Sediment         I         2527-15         =	<u> </u>	al- RAD-01-048-050		sediment	_	_		2527-13	
<i>Q.ℓ-PAŊ-<sub>0</sub>1-654-054</i>	1	Cl-PAD-01-052-054		sediment	\	_		2527-14	* ARCHIVE +
	<del>1</del> 5	al-RAD-01-654-056	<	sediment	/	/		2527-15	

Signature/Printed Name	Relinquished By:
Date/Time	Company:
Signature/Printed Name	Received By:
Date/Time	Company:

Relinquished By:

**%**ompany:

Battelle/MSL

Date/Time

Signature/Printed Name

H Gallar

Date/Time

1100

Company: MS

Signature/Printed(Name Linda S. Bingler

(SOP#: MSL-A-001 & MSL-A-002)

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Pacific Northwest Division ... Putting Technology To Work hington 98382 equim Bay Road ces Laboratory

Phone Number: 360-681-3627/360-460-7000  Shipment Method: Fed Ex overnight  Preservation: Ice	460-7000	of Containers	Pb210 Organics Cs137	I	Marine Sciences Laboratory 1529 West Sequim Bay Road Sequim, Washington 98382
Colle Line Field Sample ID Date	Collection Date/Time Matrix	No. of		Laboratory ID	Observations/Comments
1 GC-RAD-01-656-058 1/20/00	sediment	_		2527-16	et munita
2 Gl- RAD-01-060-063	sediment	_		2527-17	
3 GC-RAD-01-064-066	sediment		1	2527-18	Archive former
4 Cd- RAD-01- Dele-D68	sediment		,	2527-19	
5 CC-RAD-01-008-070	sediment			2527-20	* ARCHIVE FROZE
6 CC-RAD-01-072-D74	sediment			2527-21	
7 Gl-RAD-10-076-078	sediment			2527-22	* Archive frozen
8 GC. RAD-01-578-080	sediment	_		2527-23	
9 Cl- RM-61-080-082	sediment	-		2527-24	* Achive Rosen
10 QC- PM-01-084-086	sediment	_			
11 al-RAD-61-088-090	sediment	_		2527-26	* Achre Evan
12 BC-RAD-01-090-092	sediment			2527-27	
13 QC-RAD-01-092-094	sediment	_		2527-28	A house from
14 GC- RAD-01-696-088	sediment			2527-29	
15 RC- RAD-01-100-102 4	sediment	_		2527-30	* Aruna Gozen

Date/Time	Signature/Printed Name	Date/Time		Signature/Printed Name
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Date/Time	Signature/Printed Name	Date/Time		Signature/Printed Name
shy MITHESLAN 18 Por 1100	m Hah MU	135/00 1000	& S. Duff	Linda S. Bingler

Relinquished By:

Battelle/MSL

Company: 182

(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000

Project Name: GEI Cores

Sequim, Washington 98382 Marine Sciences Laboratory Pacific Northwest Division 1529 West Sequim Bay Road ... Putting Technology To Work

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Test Parameters

Relinquished By:  Company:  Received By:  Signature/Printed Name  Date/Time  Signature/Printed Name	Signature/Printed/Name/	mile D. June 1/23/06 1600 Pomstake MIF	Relinquished By:  Condpany: Battelle/MSL Received By:	10-148-150 Octamens 1	12.00-144-146 sediment 1 1 1	ん/-o1- RAO-1代の14分 sediment / 2527-44	61-61- PAO -138-140 sediment 1 / 2527-43	GC-01- RAD-134-738 sediment / / 2527-42	(1-01-12AD-137-134) sediment 1 1 2527-41	(1-61-RA0-138-130 sediment / 1 2527-40	(1-01-12AD-124-128   sediment   1   1   2527-39	@c-b1- PAD-124-126 sediment 1 1 2527-38	al-o1- Ran-136-132 sediment 1 1 2527-37	(L-01- (240)-116-118 sediment   1   2527-36	LC-DI-PA0-114-116 sediment 1 1 2527-38	((-0)-P/M)-1/3-/14 sediment 1 1 2527-34	LC-01-P2AD -L08-110 sediment 1 / / 2527-33	sediment /	(1-01-1/2A)-104   sediment 1	e Field Sample ID Collection O. Labor.	<b>C</b> S137	onta	Shipment Method: Fed Ex overnight
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(SOP#: MSL-A-001 & MSL-A-002)

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Pacific Northwest Division equim, Washington 98382 arine Sciences Laboratory 29 West Sequim Bay Road ... Putting Technology To Work

Observations/Comments

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(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000

Project Name: GEI Cores

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Sequim, Washington 98382 Pacific Northwest Division Marine Sciences Laboratory 1529 West Sequim Bay Road ... Putting Technology To Work

Test Parameters

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nda S. Bingler & Wurft gnature/Printed Name	linquished By:	C- RAD-12-100-102	1- RAD-17-096-098	1-12-093-17-18-17-18-17-18-18-18-18-18-18-18-18-18-18-18-18-18-	1-RAD-12-090-092	N-12-038-090	1-12AD-69-69-086-1	(-12-080-12-080-082	1-RAD R-078-086	1-1240-12-676-678	1-12m-12-072-074	C- PAD-17-668-070	1- RAD-12- Dlale-068	11. PAD-17-064-046	1-RAD-12-040-062	1-RAD-12-056-058	Field Sample ID	10001 401011	Preservation: Ice		Filotie Multipet. 300-001-302//300-400-/000
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(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000

Project Name: GEI Cores

Date:

Test Parameters

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(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000

Project Name: GEI Cores

Date:

Test Parameters

Sequim, Washington 98382 Marine Sciences Laboratory Pacific Northwest Division 1529 West Sequim Bay Road . . . Putting Technology To Work

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01/25/06 1100 Date/Time	11 Maken	Signature/Printed Name	Signati	1600	Date/Time	}	Linda S. Bingler	(A)
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(SOP#: MSL-A-001 & MSL-A-002)

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Shipment Method: Fed Ex overnight

**Containers** 

Preservation: Ice

Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000

Project Name: GEI Cores

Date:

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Preservation: Ice			Con	 Pb210	Pb210 Organics	ì	*	- ITREMINO 110 zem
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inda S. Bingler

Relinquished By:

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24/06

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(SOP#: MSL-A-001 & MSL-A-002)

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Date: // 24/06

Signature/Printed Name Relinquished By: Relinquished By: Signature/Printed Name inda S. Bingler GC-RAD-21-117-114 GC-RAO-21-116-118 We-RAD-21-114-116 Ge-RAD-21-124-126 11-12AD-21-136-122 C-1240-21-108-110 LC-12AD-21-100702 Shipment Method: Fed Ex overnight Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000 RAD-21-132-134 PAO- 31-Field Sample ID 1240-21-128-130 RAD-21-126-128 140-140-142 RAD-21-104-106 2AD-21-138-140 Project Name: GEI Cores An-21-136-138 Preservation: Ice 107-8104 Date/Time Collection 124/06  $\mathfrak{T}$ Company: Company: Date/Time Battelle/MSL sediment sediment sediment sediment sediment sediment sediment sediment sediment sediment Date/Time sediment sediment sediment sediment sediment Matrix 1600 No. of Containers Signature/Printed Name Received By: Signature/Printed Name Received By: Cs137 Pb210 | Organics Test Parameters 2527-135 2527-133 2527-132 2527-131 2527-130 2527-129 2527-128 2527-127 2527-134 2527-126 2527-125 2527-124 2527-123 2527-122 2527-121 Laboratory ID Company: MS Company: Sequim, Washington 98382 Pacific Northwest Division 1529 West Sequim Bay Road Marine Sciences Laboratory E) \$ Observations/Comments Putting Technology To Work Date/Time Date/Time X A × Archive Frozen

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(SOP#: MSL-A-001 & MSL-A-002)

Project Name: GEI Cores

Pacific Northwest Division .. Putting Technology To Work Road Road 382

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Signature/Printed Name	Relinquished By:		Linda S. Bingler //////// J. Signature/PrinteckName	Relinquished By:															Ge-RAD-21-148-150	GE-RAD-21-144-146	Field Sample ID		Preservation: Ice	Shipment Method: Fed Ex overnight	Phone Number: 360-681-	Project Manager: Linda Bir
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(SOP#: MSL-A-001 & MSL-A-002)

Project Name: GEI Cores

Marine Sciences Laboratory Pacific Northwest Division ... Putting Technology To Work 1gton 98382 ıim Bay Road

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11	collected 1/25/26 sh														Observations/Comments			Sequim, Washington 98382	1529 West Sequim Bay Road	Marine Sciences Laboratory

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134/06 Date/Time

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Line 4 <u>1</u>3 12 5 ဖ (SOP# MSL-A-001 & MSL-A-002) 15 CC-0Rh-01-662064 ω 61-0Rh-01-050-052 Relinquished By: Signature/Printed Name Relinquished By: 61-0106-01-058-060 61-0166-01-010-012 66-086-10-030-33 beall1-10, 4210-17 GC-026-01-606-008 61-0261-01-046-048 21-016-01-014-016 W-016-10-602-004 8c0-260-10-420-7 oro-810-10 420-020 1-0Rh-01-634-036 Shipment Method: 1-014-01-038-04 1-0126-61-642-049 Project Manager: Phone Number: Field Sample ID Project Name: Preservation: Steve 120 0205 -189 -181 10Wanus Collection Date/Time 122/06 svernia ut Company: Lanal DO HATE MISE Seliment Matrix 103 No. of Containers

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Sequim, Washington 98382 Marine Sciences Laboratory Pacific Northwest Division 1529 West Sequim Bay Road

Test Parameters

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Signature/Printed Name

Line 14 Gr-024 61-146-148  $\vec{\omega}$ (SOP# MSL-A-001 & MSL-A-Signature/Printed Name Relinquished By: Relinquished By: 12-22- 4 @ 1/2/00 Cu -01-130-132 Cal-010-01-08208 M-014-01-074-02 11-880-19-720-1X 66-016-01-086-08 al-026-01-070-072 Shipment Method: 1-024-01-134-136 1-0124-01-1094-09 461-64-10-220-1 C-UR4-01-118-120 Project Manager: 540/ Phone Number: 78/-6 12-147-147-144 1-0126-01-110/12 1- 6Ph-01-106-108 Field Sample ID Project Name: Preservation: Company:

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(SOP# MSL-A-001 & MSL-A-002) Project Manager: Phone Number: Project Name: 281-681-5040-182

Sequim, Washington 98382 1529 West Sequim Bay Road Pacific Northwest Division Marine Sciences Laboratory ... Putting Technology To Work

Test Parameters

1		l est Parameters	Marine Sciences Laboratory
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Line Field Sample ID Date/Time	Matrix 2	2	Laboratory ID Observations/Comments
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hro-leg-l-4210-17 3		×	X
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8 66-026-17-630-032		X	*
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10 6.6-014-12-038-040		×	<b>P</b>
11 ac-012-643544		×	A
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(SOP# MSL-A-001 & MSL-A-902)

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Observations/Comments

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Signature/Printed Name	
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(SOP# MSL-A-001 & MSL-A-002)

Line GC-086-21 062-064 (ac-0R6-2) 050-052 GC-086-21 046-048 64-086-31 042-044 GC-086-21 038-040 6-086-21 058-060 G-026-21 034-036 GC-086-21 OH-016 (C-086-31 024-028 G-0PG-21 006-008 GC-086-21 030-032 PEC-086-31 032-034 GC-0R6-21 018-020 GC-086-21 010-012 GC-ORG-21 002-004 Shipment Method: Project Manager: Phone Number: Field Sample ID Project Name: Preservation: 360 0460 GEI Cores poor RO LX 5 124/06 Collection Date/Time 7000 rdiment Matrix No. of Containers ORGANICS Test Parameters Laboratory ID Sequim, Washington 98382 Marine Sciences Laboratory Pacific Northwest Division 1529 West Sequim Bay Road \*\*Battelle Putting Technology To Work

Observations/Comments

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Date Time	Signature/Printed Name	Date/Time I		nature/Printed Name
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(SOP# MSL-A-001 & MSL-A-002)

Line ದ 12 9 15 to 024-24 MF 14 GC-08G-21 GC-0RG-21 142-144 GC-086-31 Relinquished By: |Signature/Printed/Mame Relinquished By: 60-086-21 G-086-21 GC-0R6-21 GC-086-21 GC-086-21 60-026-21 094-096 GC-0RG-2) 186-088 GC-086-21 032-084 GC-086-2) 074-076 GC-086-21 070-072 AC-076-2) 098-100 Shipment Method: Project Manager: Phone Number: Field Sample ID Project Name: Preservation: 122-124 146-148 130-132 110-112 106-103 134-136 118-120 Unda Bingler GEI Cores 360 460 J. 7000 Rd Ex R 124106 Collection Date/Time Company: Company: Sediment Matrix No. of Containers ORGANICS igoature/Printed Name Test Parameters Laboratory ID

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Putting Technology To	Battelle

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Sequim, Washington 98382 1529 West Sequim Bay Road Marine Sciences Laboratory Pacific Northwest Division To Work

Observations/Comments

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(SOP# MSL-A-001 & MSL-A-002) Project Name: 100 Anus

Project Manager: Phone Number:

-180-184

Sequim, Washington 98382 1529 West Sequim Bay Road Marine Sciences Laboratory Pacific Northwest Division · Putting Technology To Work

Test Parameters

15 KC-0Kh-87-662-064	14 66-064.87.058-060	13 M-066-87-050-051	12 GLOCK-87-044-248	11 45-066-87-048-0AT	10 Ge-0166-87-038-678 540	9 62-0126-87-632-034-036	8 GC-084-87-688-030-032	2 CC-ORG-87-036-038	#EC-860-18-0210 -179 9	2 CT-060-87-018-48	4 62-026-87-014-016	3 GC-OCC-87-010-012	2 (1.C-OK4-87-000 008		Field Sample ID	Collection		Preservation:	Shipment Method: Fed Ex	
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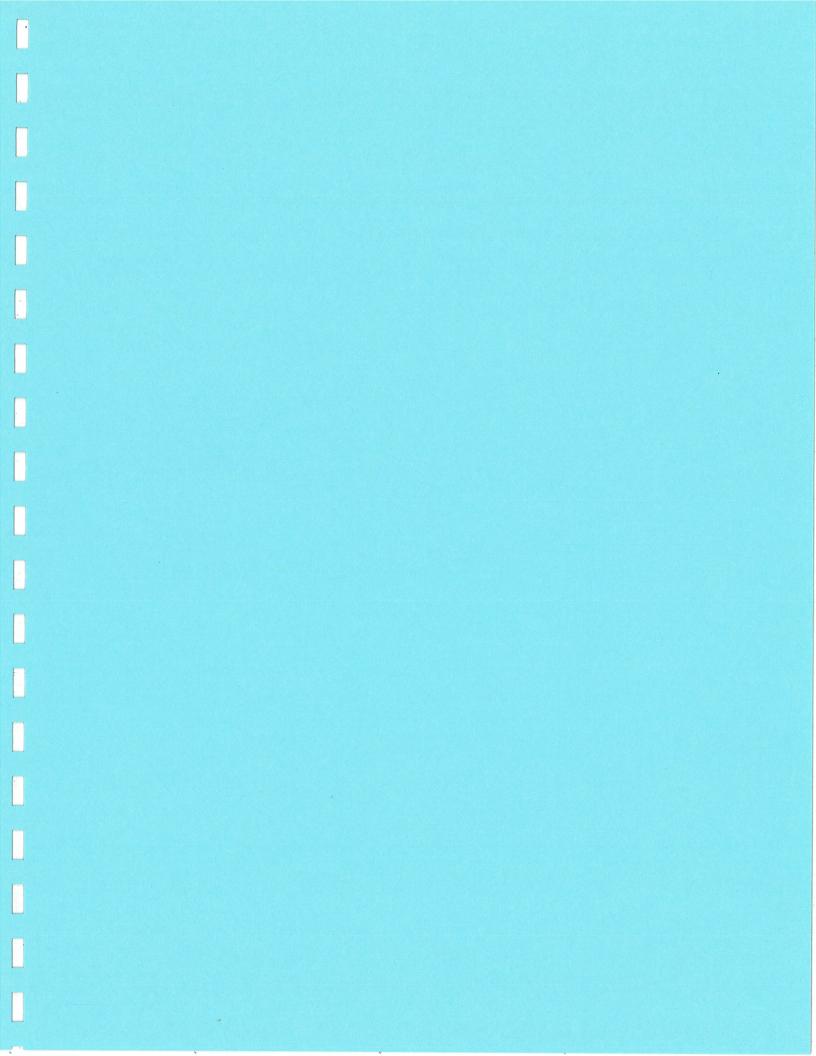
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Central File #:	2327 Sample N	lo(s): 150-183	Project Mana	ger: Bingler.
TO BE COMPLET	ED BY PROJECT MANAG		nen possible)	y ungler
Yes No	rix: Serliment		WP# <u>W75789</u>	
	avy <sub>t</sub> type Project (requires	s high-level sample trac	kina procedures)	
		Entire's	(1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000	Sample
X Fr	eeze dry sample(s) - samp	oles will be weighed and	placed in ultralow temp fre	sample
X sp	pecial instructions:		August an ann ann a teamp the	ezer (Lab# 130)
Sample Preserva	tion Instructions:		1 1	
Date To Archiv		Date To Dis	inose:	
TO BE COMPLET	ED UPON SAMPLE AF		pose. Je Hims	
Yes No N/				
Dept 1	Was a custody seal p			
Par	Was the custody sea			
		rature(s) within accepto	this way of a good	
	(if multiple coolers,	note temp. of each)	ible range of 4±2°C?	3. <del>7</del> °C
	Was Project Manager Comment/Remedy:	notified of any custod	y/login discrepancies (coole	er temp, sponsor codes, etc)?
	_Were <u>all</u> chain of cus	tody forms signed and	dated?	
	Were samples filtered		-4.04.	·
Sample and district			C. 1008 122 4 Store West London Commence	
Sample condition(s):	Acceptable	other (ex	olain):	
Container type:	Teflőn Da	oly Glase Spex	100 Sept. 100 Se	
Notes:	Conton	ory Glass (Spex )	Other:	and authorized the second
140165.				-
Complete 18	0			
Completed By:	Maker		Date/Time: 0/26/0	6 1330
SAMPLE PRESERVA	ATION			
Sample(s) wer	re preserved at MSL			
Sample(s) wer	e preserved prior to arriv	val at MSL (noted on Co	C / Sample / per PM Instru	
Random pH ch	ecked for ~10% of sample	es (use din nanan)		iction )
P4	heck required for project		Sample IDs:	
	sary, record Acid Lot#	t (use pri meter and red	ord on pH Record form)	
Type: 0.2%		Notes:		
0.5%	HCl (Hg samples)	Notes:		
·	erate/Freeze	Notes: Doen 1/2	40 6 1 1	
Other		Notes:	ver & outside	July ( See Login )
Completed C	Coll,			
Completed By	7) Wah		Date/Time: 01/26/00	5 1330

(SOP#: MSL-A-001 & MSL-A-002)

Project Name: GEI Cores
Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000

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Pacific Northwest Division Marine Sciences Laboratory Sequim, Washington 98382 1529 West Sequim Bay Road

Test Parameters

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	2527-162		×		sediment		CR-RAD -87-684-086	12 (
*	2527-161		\ \	\	sediment		UP-12A0-57-080-682	=======================================
	2527-160		~	_	sediment		61-1240-57-078-080	10
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A	2527-155 A		×	`	sediment		GC-RAD-87-664-066	5
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Sequim, Washington 98382	Sequii	1) of the line		ine		overnicht	Shinment Method: Fed Ex overnight	
1529 West Sequim Bay Road	6751	)		⊥ rs		362//360-460-/000	Filotie Nutitibet. 360-661-362//360-460-/000	

(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler

Project Name: GEI Cores

Phone Number: 360-681-3627/360-460-7000

Test Parameters

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Putting Technology To	Battelle

1529 West Sequim Bay Road Sequim, Washington 98382 Marine Sciences Laboratory Pacific Northwest Division ... ruung Iechnology To Work

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4	2527-179		×	/	sediment	The state of the s	Ge-RAD-87-176-138	4
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X	2527-177	The state of the s	7	\	sediment		ac-RAD-87-128-130	12
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以	2527-175		*	_	sediment		LC-RAD-87-124-126	0
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	2527-168		<b>&gt;</b> <		sediment		101-CM-87-12	ω
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Observations/Comments	Laboratory ID			No. o	Matrix	Collection Date/Time	Field Sample ID	ine
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* 1 Julian From	×	20. he 1 (1)	!	ntaiı		overnight	Shipment Method: Fed Ex overnight	
Sequim, Washington 98382	Sequ			ner				
1529 West Sequim Bay Road	6791,			s		-362//360-460-/000	Friorie Number: 360-681-362//360-460-7000	

Signature/Printed Name

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Company:

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Company:

Date/Time

Signature/Printed Name

Date/Time

(SOP#: MSL-A-001 & MSL-A-002)

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Shipment Method: Fed Ex overnight

of Containers

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Pb210 Organies

Preservation: Ice

Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000

Project Name: GEI Cores

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Sequim, Washington 98382 Marine Sciences Laboratory Pacific Northwest Division 1529 West Sequim Bay Road ... Putting Technology To Work

Test Parameters

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Signature/Printed Name	John Mah	Received By											×	*	×.	×	*	
	MLFH Galar %	Company:	2527-195	2527-194	2527-193	2527-192	2527-191	2527-190	2527-189	2527-188	2527-187	2527-186	2527-185 ** 25/Ju	9527-184 <i>(1</i> 1)	2527-183	2527-182	2527-181	Laboratory ID
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Signature/Printed Name

Date/Time

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## Line 1 5 4 13 $\vec{\Box}$ 12 0 (SOP# MSL-A-001 & MSL-A-002) SAMPLE CUSTODY RECORD 9 ω တ G Signature/Printed Name Relinquished By: Signature/Printed Mame Relinquished By 18-080-87-146-14D Shipment Method: it-6124-87-143-44 Project Manager: -0RG-87-134-18 Phone Number: Field Sample ID Project Name: Preservation: Linda Bi Date/Time Collection 125/06 Company: Date/Time Solo allinos **Matrix** 1600 No. of Containers organics Received By: Received By: Signature/Printed Name Signature/Printed Name Test Parameters Laboratory ID Sequim, Washington 98382 Pacific Northwest Division Marine Sciences Laboratory 1529 West Sequim Bay Road Company: Company: MSL 126/06 Date/Time Date/Time Observations/Comments Holive 18

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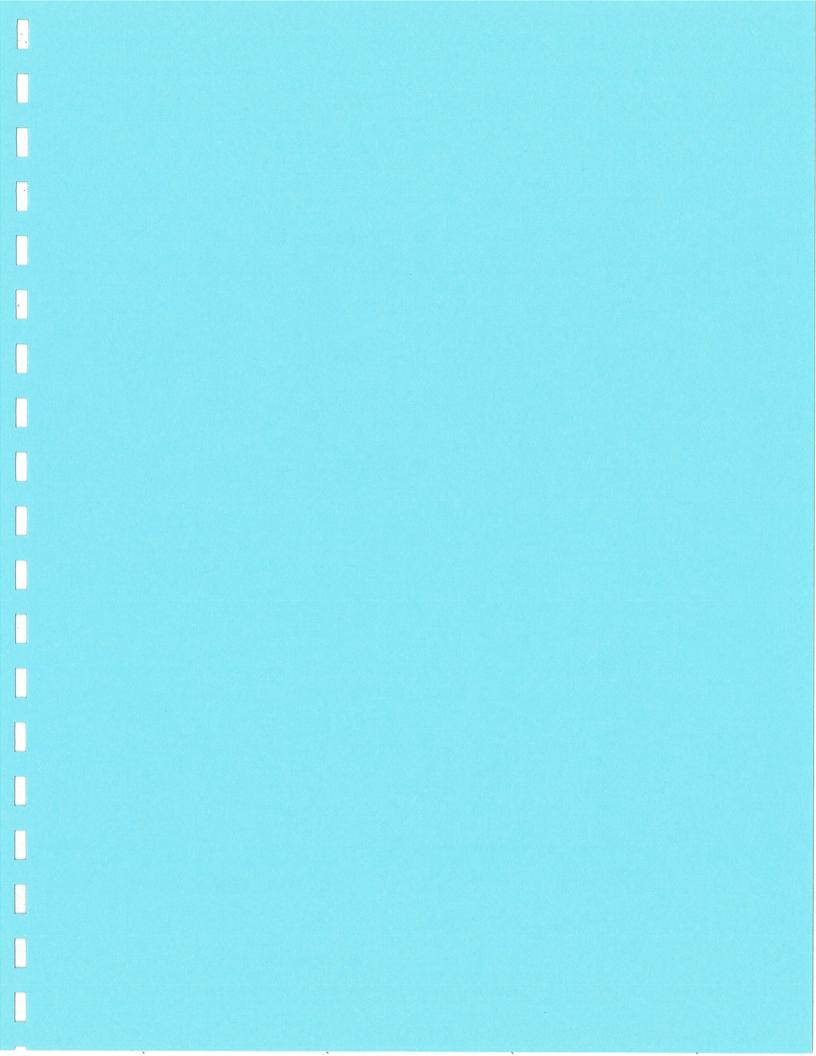
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Central File #: 25 27 Sample No(s): 184-229 Project Manager: BLOS 184
TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)
Yes No WP# W75789
Navy-type Project (requires high-level sample tracking procedures)
X Filton Complete
Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)
Special instructions:
Sample Preservation Instructions:
Date To Archive: Date To Dispose: Lee Lines
TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN
Yes No N/A Indicate in Appropriate Box
Was a custody seal present?
Was the custody seal intact?
Was cooler(s) temperature(s) within acceptable range of 4±2°C? 5.0 °C
(if multiple coolers, note temp. of each)
Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)  Comment/Remedy:
Were samples filtered at MSL?
Sample condition(s):  Acceptable Ofher (explain):
Container type: Teflon Poly Glass Spex Other
Notes:
Completed By: Date/Time: 0/27/06 1200
SAMPLE PRESERVATION
Sample(s) were preserved at MSL
Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction )
Random pH checked for a 10% of samular ( ) to
Complete pH check required for project (use pH meter and record on pH Record form)
If preservation necessary, record Acid Lot#  Type: 0.2% HNO3 Notes:
O Sev Market
0.5% HCl (Hg samples) Notes:
Refrigerate/Freeze Notes: Weep freeze outside freeze
Other Notes:
Completed By 100 Hab Date/Time: 0/23/00 (230)

(SOP#: MSL-A-001 & MSL-A-002)

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Pacific Northwest Division Marine Sciences Laboratory ... Putting Technology To Work ashington 98382 Sequim Bay Road

Project Name: GEI Cores Project Manager: Linda Bingler	res inaler			Test	est Parameters	
Phone Number: 360-681-3627/360-460-7000	1-3627/360-460-7000		rs			
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2		sediment				2527-182
4		sediment				2527-183
4 M-RAD-60-502	90/DC/1	sediment	/	ス		2527-184
5 CI - CAD-110- 804-006		sediment		4		2527-185
6 W-RAO-40-008-010		sediment		X	-	2527-186
7 Gl-RAD-60-017-014		sediment	_	Υ-		2527-187
8 BC-12A0-60-014-018		sediment		X		2527-188
9 GC-RAO-60-030-022		sediment		~		2527-189
10 LC-1CAD-60-024-02C		sediment		×		2527-190
11 GC-1CAD-60-078-030		sediment	_	×		2527-191
12 Gl-RAD-40-032-034		sediment		× -		2527-192
13 GC- PAD -60-036-038		sediment		Υ.		2527-193
14 G1-12AD-40-040-042		sediment	_	×		2527-194
15 GC-RAD-40- 044-046	A.	sediment	<u></u>	~ ~		2527-195

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(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000

Project Name: GEI Cores

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Pacific Northwest Division Marine Sciences Laboratory Sequim, Washington 98382 1529 West Sequim Bay Road ... Putting Technology To Work

Test Parameters

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Project Name: GEI Cores

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Marine Sciences Laboratory Pacific Northwest Division ... Putting Technology To Work ngton 98382 uim Bay Road

Phone Number: 360-681-3627/360-460-7000	Shipment Method: Fed Ex overnight	Preservation: Ice		e Field Sample ID	al-RAD-60-093-094	al-1240-60-090-098	W-12AD-60-100-102	GC-RAD-60-102-164	61-140-40-104-106	66-12AD-60-108-110	al-1240-60-112-114	61-1290-60-114-116	M-1240-10-116-118	61-120-60-120-122	CL-129-10-124-126	GC-RAD-60-124-128	GC-RAD-60-128-130	al-1240-60-132-134	GC-12A0-60-134-138
gler 3627/360-460-7000	overnight		Collection	Date/Time	1/2/1/06	, , , ,													¥
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Marine Sciences Laboratory 1529 West Sequim Bay Road	Sequim, Washington 98382			Observations/Comments			A		K		X		¥		10		*		A

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inda S. Bingler

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Battelle/MSL

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Date/Time 126/06

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(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler

Project Name: GEI Cores

Phone Number: 360-681-3627/360-460-7000

Sequim, Washington 98382 Marine Sciences Laboratory Pacific Northwest Division 1529 West Sequim Bay Road ... Putting Technology To Work

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## Line 15 CC-0RG-60-062-064 5 Signature/Printed Name C-076-60-038-040 Relinquished By: Signature/Printed Name Relinquished By: W-0RG-60-046-048 860-960-09-7300-79 66-086-60-058-060 60-024-60-034-036 120-C-09-60-047-044 MC-DR4-60-022024 16-0R6-60-014-016 20 0194-60-030032 16-016-10-01-030 Shipment Method: P-0164-60-050-052 2000-60-610-012 1-060-00-008 Project Manager: Phone Number: 340-460-0 7000 Field Sample ID Project Name: \_ Preservation: Collection Date/Time 24/06 Company: Company: Date/Time Date/Time Willmant Matrix 106 No. of Containers Signature/Printed Name Signature/Printed Name Received By: Received By: Test Parameters Laboratory ID Sequim, Washington 98382 Marine Sciences Laboratory 1529 West Sequim Bay Road Pacific Northwest Division Company: Company: 18 ... Putting Technology To Work 0/23/06 Date/Time Date/Time Observations/Comments rozar

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(SOP# MSL-A-001 & MSL-A-002)

SAMPLE CUSTODY RECORD

## Line 11 Ke-ORh-60-130-132 4 13 10 (SOP# MSL-A-001 & MSL-A-002) SAMPLE CUSTODY RECORD 12 5 Signature/Printed Name 61-026-60-146-148 61-019-60-134-136 Relinquished By: Signature/Printed/Jame Relinquished By: 61-626-00-122-124 Le-0124-60-118-120 ev. 02 18-016-101-144 20-0124-60-110-112 21-0124-60-098-100 21-024-60-106-108 St-08Ch-60-086-088 Shipment Method: 1-024-60-094-096 C-0124-60-070-072 h80-680-07-7210-1 -0124-60-074-076 Project Manager: Phone Number: Field Sample ID Project Name: Preservation: ŏ -460-70 Collection Date/Time MRES 26/06 Company: Dis ž Z Date/Time Date/Time Dedinent Matrix Labo Proje No. of Containers Organos š Signature/Printed Name Received By: Signature/Printed Name Received By Test Parameters '- La 5 2 Pink Laboratory ID ipler Sequim, Washington 98382 Pacific Northwest Division 1529 West Sequim Bay Road Marine Sciences Laboratory \*\*Battelle Company: Company: 1951 ... Putting Technology To Work 20/52/06 Date/Time Date/Time Observations/Comments 70 TRUNA 07 rosu 100

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Central File #: 2527 Sample No(s): 230-08 Project Manager: Bungler
TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)
Yes No WP# W 75789
Navy type Project (requires high-level sample tracking procedures)
Silton Country
Figure
Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)  Special instructions:
Sample Preservation Instructions:
Date To Archive: Date To Dispose: In Jims
TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN
Yes No N/A Indicate in Appropriate Box
Was a custody seal present?
Was the custody seal intact?
Was cooler(s) temperature(s) within acceptable range of $4\pm2^{\circ}C$ ? $1-5-3$ $3-2-4$ °C
(if multiple coolers, note temp. of each)
Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)?  Comment/Remedy:
Were samples filtered at MSL?
\$ Section of the sect
Sample condition(s):  Acceptable Other (explain):
Container type: Tefting Poly Glass Spex Other:
Notes:
2 - C 1/1
Completed By: 10 Wah Date/Time: 0/31/05 1200
SAMPLE PRESERVATION
Sample(s) were preserved at MSL
Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction )
Random pH chacked for \$10% of \$100 to \$100.
Complete pH check required for project (use pH meter and record on pH Record form)
If preservation necessary, record Acid Lot#  Type: 0.2% HN03 Notes:
0.5% (1.0) (1.1)
0.5% HCI (Hg samples) Notes:
Refrigerate/Freeze Notes: Deep from & autside freeze
Other Notes:

(SOP#: MSL-A-001 & MSL-A-002)

Project Name: GEI Cores

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Project Manager: Linda Bingler Phone Number: 360-681-362	Shipment Method: Fed Ex overnight	Preservation: Ice		Field Sample ID					GC-RAD-88-000-002	al-12A0-88-004-006	GC-RAD-88-608-610	61-1240-88-017-014	G1-RAD-88-016-018	CC-060-88-0AD-021	Ge-1240-88-124-026	[-1-120-88-030	GC-RAD-88-032-034	GC-120-88-636-638	61-RAD-88-040-042
Linda Bingler 360-681-3627/360-460-7000	overnight			Collection Date/Time					107/06										+
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Marine Sciences Laboratory	Sequim, Washington 98382			Observations/Comments															

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Date/Time	
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Linda S. Bingler / Signature/Printed Name

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(SOP#: MSL-A-001 & MSL-A-002)

Shipment Method: Fed Ex overnight

Preservation: Ice

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Project Manager: Linda Bingler

Project Name: GEI Cores

Phone Number: 360-681-3627/360-460-7000

Test Parameters

Marine Sciences Laboratory

1529 West Sequim Bay Road

Pacific Northwest Division

Putting Technology To Work

Sequim, Washington 98382

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4 3 12 10 ω Relinquished By: Signature/Printed Name Signature/Printed Name Relinquished By: GC-12AD-88-084-086 al-240-88-078-080 Ch-1CAD-88-076-078 GC-RAO-88-064-06C 66-1240-88-680-082 26-1240-88-072-074 CL-CAD-88-068-070 66-190-88-060-062 inda S. Bingler 45 a-650-88-002-024 LC- RAO-88-048-050 26-1240-88-066-668 W.RAD-88-044-046 C-14AD-88-088-090 1247-88-056-058 (1AD-88-054-056 Field Sample ID 127/06 Collection Date/Time Company: Company: Date/Time Battelle/MSI sediment sediment sediment sediment Date/Time sediment sediment sediment sediment sediment sediment sediment sediment sediment sediment sediment Matrix 1000 No. of Containers Signature/Printed Name Received By: Signature/Printed Name Received By: 2527-255 2527-254 2527-253 2527-252 2527-251 2527-250 2527-249 2527-248 2527-246 2527-244 2527-243 2527-242 2527-241 2527-247 2527-245 Laboratory ID | Observations/Comments 1/31/06 Company: Company: 1450 Date/Time X Date/Time 4 1200

(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler

Project Name: GEI Cores

Phone Number: 360-681-3627/360-460-7000

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Sequim, Washington 98382 Marine Sciences Laboratory Pacific Northwest Division 1529 West Sequim Bay Road ... rutting Technology To Work # - Ardure Frozen

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(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000

Project Name: GEI Cores

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Project Name: GEI Cores

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Marine Sciences Laboratory Pacific Northwest Division 1529 West Sequim Bay Road ... rutting Technology To Work ton 98382

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Linda S. Bingler Signature/Printed Name

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(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler

Project Name: GEI Cores

Test Parameters

Pacific Northwest Division Marine Sciences Laboratory 1529 West Sequim Bay Road ... Putting Technology To Work igton 98382

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inda S. Bingler

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Company:

Battelle/MSL

Received By:

Company: \_

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Signature/Printed Name

(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000

Project Name: GEI Cores

Test Parameters

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2527-306		と	_	sediment		401-601	W-RAD-31-102-104	6
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Phone Number: 360-681-3627/360-460-7000 Field Sample ID Project Name: GEI Cores Preservation: Ice 138-140 Collection Date/Time Company: Company: Date/Time Date/Time Battelle/MSL sediment sediment sedimentsediment sediment 30/06 Matrix 1000 No. of Containers Received By Signature/P Signature/Printed Name Received By Pb210 Organics χ 8 452)1-800 Test Parameters

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## Battelle

(SOP#: MSL-A-001 & MSL-A-002)

SAMPLE CUSTODY RECORD

Pacific Northwest Division
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

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Date: 1/29/06

(SOP#: MSL-A-001 & MSL-A-002)

Project Name: GEI Cores

SAMPLE CUSTODY RECORD

Pacific Northwest Division Marine Sciences Laboratory ... Putting Technology To Work Bay Road

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Distribution: White - Laboratory Project Files

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(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000

Project Name: GEI Cores

SAMPLE CUSTODY RECORD

Pacific Northwest Division Marine Sciences Laboratory 1529 West Sequim Bay Road ... Putting Technology To Work

Test Parameters

Sequim, Washington 98382

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784	Company: PSL	Зу:)	Received By:		Battelle/MSL		Relinquished By:	
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(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000

Project Name: GEI Cores

SAMPLE CUSTODY RECORD

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Sequim, Washington 98382 Marine Sciences Laboratory Pacific Northwest Division 1529 West Sequim Bay Road Putting Technology To Work

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1529 West Sequim Bay Road	15	)	<u>-</u>		ers		627/360-460-7000	Phone Number: 360-681-3627/360-460-7000	
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SAMPLE CUSTODY RECORD (SOP#: MSL-A-001 & MSL-A-002)	RECORD			Date:	1/26/26	%I%.	**Battelle
Project Name: GEI Cores	לי			ı		Pa	Putting Technology To Work Pacific Northwest Division
Project Manager: Linda Bingler	ngler			Test F	Test Parameters	Ma	Marine Sciences Laboratory
	360-681-3627/360-460-7000		ers			152	29 West Sequim Bay Road
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4 Ce-1240-78-138/100		sediment		ト		2527-364	
5 CC-RAD- 74-140-142		sediment		X		2527-365	X
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# SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

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ac ue. 60-1 Shipment Method: Fed Ex overnight Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000 Project Name: GEI Cores ntainers Test Parameters Sequim, Washington 98382 1529 West Sequim Bay Road Marine Sciences Laboratory Pacific Northwest Division

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Linda S. Bingler

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Test Parameters

Pacific Northwest Division Marine Sciences Laboratory

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SAMPLE CUSTODY RECORD (SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler

Project Name: GEI Cores

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Date/Time Signature/Printed Name	Company: Received By: Company	Company: Battelle/MSL Received By: Company    30/06/1600   Signature/Printed Name
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(SOP#: MSL-A-001 & MSL-A-002)

Project Manager: Linda Bingler

Project Name: GEI Cores

SAMPLE CUSTODY RECORD

Sequim, Washington 98382 Pacific Northwest Division Marine Sciences Laboratory 1529 West Sequim Bay Road ... Putting Technology To Work

Test Parameters

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SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Shipment Method: Fed Ex overnight

Containers

Preservation: Ice

Project Manager: <u>Linda Bingler</u>
Phone Number: <u>360-681-3627/360-460-7000</u>

Project Name: GEI Cores

1529 West Sequim Bay Road Sequim, Washington 98382 Pacific Northwest Division Marine Sciences Laboratory .. Putting Technology To Work

Test Parameters

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## Line 4 13 <u>~</u> SAMPLE CUSTODY RECORD (SOP# MSL-A-001 & MSL-A-002) 5 12 Bl-01-88-046-048 6 ဖ 090-850-88- DAG-19 16-02-88-062-064 150-050-88-D80-057 Signature/Printed Name Relinquished By: Signature/Printed Name Relinquished By: bra-88-88-043 al-04-88-038-040 PL-04-88-034-036 860-960-88-510-038 CC 014-88-630-03) 060-810-83-20-20 hearetes-88-510-7 Shipment Method: 1-04-88-014-016 1.00g-88-010-012 Project Manager: Phone Number: Field Sample ID Project Name: Preservation: 200-000-88 100-200-88 360-466hET Corres to pa Date/Time Collection 127/06 Company: Xell Ment Matrix No. of Containers Digames Signature/Printed Name Received By: Signature/Printed Name Received By Test Parameters Laboratory ID ... Putting Technology To Work Pacific Northwest Division Sequim, Washington 98382 Marine Sciences Laboratory 1529 West Sequim Bay Road Company: MSL Company: Date/Time Observations/Comments trouve trozer 1200

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## <u>ئہ</u> 4 2 5 Line 악 ಭ SAMPLE CUSTODY RECORD (SOP# MSL-A-001 & MSL-A-002) ဖ $\infty$ တ Ŋ Signature/Printed Name Marcha-18-120-27 Cl-0101-31-038-040 Signature/Printed Name Relinquished By: Relinquished By: 860-040-16-1719-N 61-086-31-062-064 61-016-31-058-000 aro-480-18-200-12 40-014-31-014-018 GC-6R631-050-052 1C-084-31-030-032 No 260-11-037 034 11-0121-046-048 10-0101-31-088-030 16-0Pm ME-0824-31-006-008 Shipment Method: e. 0.26-31-002-004 Project Manager: Phone Number: Field Sample ID Project Name: Preservation: 21-010-012 LET GNIS Inde Sing sho-doo toos Ted EX Collection Date/Time Company: company: Date/Time Date/Time 12/06 Xornan Matrix 1600 No. of Containers 8 Games Received By: Signature/Printed Name Received By: Signature/Printed Name Test Parameters Laboratory ID Sequim, Washington 98382 Marine Sciences Laboratory Pacific Northwest Division 1529 West Sequim Bay Road \*\*Battelle Company: 15 Company: Date/Time Date/Time Observations/Comments tolive rosan

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## Line 5 (SOP# MSL-A-001 & MSL-A-002) SAMPLE CUSTODY RECORD 5 2 $\vec{\omega}$ W-019-31-146-148 61-013-31-134-136 Signature/Printed Name Relinquished By: Signature/Printed Name Relinquished By: GE-06,-31-130-132 HELEC1-15-120-17 ac-18-130 U-013-31-106-108 18-011-31-088-100 ac 219-31-130-138 6-016-31-110-112 96-01- 31- 094-036 880080-16-40-1 Shipment Method: 180-68018-510. 6-019-31-874-076 1-019-11-070-072 Project Manager: Phone Number: Field Sample ID Project Name: Preservation: how how Too ded Ex Collection Date/Time Company: Ompany: Date/Time Date/Time TAX minus Matrix No. of Containers Signature/Printed Name Received By: Received By: ~ Signature/Printed Name lest Parameters Laboratory ID Sequim, Washington 98382 ... Putting Technology To Work Pacific Northwest Division Marine Sciences Laboratory 1529 West Sequim Bay Road Battelle Company: Company: Date/Time Date/Time Observations/Comments MINO 200 120300

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## 그 5 Line (SOP# MSL-A-001 & MSL-A-002) SAMPLE CUSTODY RECORD 14 $\vec{\omega}$ 73 5 Signature/Printed Name ? Cc-059-13-062-064 Signature/Printed Name Relinquished By: Relinquished By: ac-05-78-646 08 40-019-78-038-040 Ac-019-78-002-054 2C-019-78-058-060 26-050-87-18-050-082 15-18-84-04A 760-160-8t-510-37 15-002-48-000-039 20019-17-036-02 MERCEGO - 88- 64-73 ac-019-78-018-020 1.C-8K-78-514-016 Shipment Method: 200-006-108 Project Manager: -019-78-010-012 Phone Number: Field Sample ID Project Name: Preservation: 360-468-7000 4 red Ex Collection Pate/Time 29/06 Company: Date/Time Bodinest Matrix No. of Containers Date: / Received By: Signature/Printed Name Signature/Printed Name Received By: Test Parameters Laboratory ID ... Putting Technology To Work Pacific Northwest Division Sequim, Washington 98382 1529 West Sequim Bay Road Marine Sciences Laboratory Battelle Company: Company: 2/2/26 Date/Time Observations/Comments TO IN 020 Notor

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## Line (SOP# MSL-A-001 & MSL-A-002) 4 SAMPLE CUSTODY RECORD 3 2 0 5 9 $\infty$ O $\Omega$ 4 acora-78-130/32 FC-661-84-182-137 Record - 78-134-136 Relinquished By Wrey1-87-100-22 Signature/Printed Name Relinquished By: Signature/Printed Name 2005-78-110-112 acor- 18-086-088 82-121-88-121-12 2Corg-78-118-120 Corg-78-106-108 15-679-77-084-08 C-019-78-088-100 Shipment Method: 120180-84-682-084 40HO-84-60-5 Project Manager: Phone Number: Field Sample ID Project Name: Preservation: 360-460 -0700 Date/Time Collection 29/06 Company: Date/Time edemons Matrix No. of Containers organis Signature/Printed Name Signature/Printed Name Received By: Received By: Test Parameters Laboratory ID Sequim, Washington 98382 Marine Sciences Laboratory ... Putting Technology To Work Pacific Northwest Division 1529 West Sequim Bay Road \*\*Battelle Company: Company: 0/2//00 Date/Time Date/Time Observations/Comments Trans + 10 sur 8

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Line (SOP# MSL-A-001 & MSL-A-002)

Project Name: LEE CAYES SAMPLE CUSTODY RECORD 4 AAO-CAO-CAO-040-050 11 13 GC org-600-050 050 12 hc-05 LOD-046-048 16-69-600-063-069 C00-600-058-060 pc-019-600-038-040 Relinquished By: Signature/Printed Name Signature/Printed Name Relinquished By Jean 89 - 10,00 - 12 - 02 D 3C0-920-019-01 2C-0x9-600-034-036 MO-CTO-019-209-27 aco-810-009-500-03 210-119-009-514-016 Shipment Method: 600-000-000-600-Project Manager: -019-600-006-008 -010-010-010-0h Phone Number: Field Sample ID Preservation: fied Ex 365-460-Collection Date/Time 39/06 E Company: Compar Date/Time Sedwant Matrix No. of Containers Signature/Printed Name Received By: Signature/Printed Name Received By: Test Parameters Laboratory ID Sequim, Washington 98382 Pacific Northwest Division 1529 West Sequim Bay Road Marine Sciences Laboratory \*\*Battelle Company: Company: Date/Time Observations/Comments Hillive L 1200 A CON

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## Line **SAMPLE CUSTODY RECORD** 4 $\vec{\omega}$ (SOP# MSL-A-001 & MSL-A-002) 2 9 3 Field Sample ID (2017) Collection CC-019 - 35-670-070 /1-41-1 Signature/Printed Name Relinquished By: Relinquished By: ac-600-110-112 16-413-600-0940g Signature/Printed Name OF1811-099-120-2 480-680-009-600 J ac-140-000-074-07 GC-015-600-104-108 ac-019-600-686-081 U1-015-600-134-1376 16-00-600-698-100 16-019-1001-100-13 Shipment Method: 16-013 400-130-13 S, Bingle Project Manager: Phone Number: Project Name: \_ Preservation: 60-460- Food ted & These 90/6C Company: Date/Time )ate/Time 30/06 Siment Matrix 1600 No. of Containers organics Signature/Printed Name Received By: Signature/Printed Name Received By: Test Parameters Laboratory ID Sequim, Washington 98382 ... Putting Technology To Work Pacific Northwest Division Marine Sciences Laboratory 1529 West Sequim Bay Road \*\*Battelle Company: Company: Date/Time Observations/Comments Munch 名の 07

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Central File #: 2527 Sample No(s): 409 425 Project Manager: BUS/40
TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)
Matrix: WP#
Yes No  Navy type Project (requires high-level sample tracking procedures)
Filter Samples: Amount: Entire sample Half of sample
Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)
Special instructions:
Sample Preservation Instructions:
Date To Archive: Date To Dispose:
TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN
Yes No N/A Indicate in Appropriate Box
Was a custody seal present?
Was the custody seal intact?
Was cooler(s) temperature(s) within acceptable range of $4\pm2^{\circ}$ C? 2.4 °C
(if multiple coolers, note temp. of each)
Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)?  Comment/Remedy:
Were samples filtered at MSL?
Sample condition(s):  Acceptable Other (explain):
Acceptable other (explain):
Container type: Teflon Poly Glass Spex Other:
Notes:
Completed By: A Date/Time: 03/06 1200
SAMPLE PRESERVATION
Sample(s) were preserved at MSL
Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)
Random pH checked for ~10% of samples (use dip paper)  Sample IDs:
Complete pH check required for project (use pH meter and record on pH Record form)
If preservation necessary, record Acid Lot#
Type: 0.2% HNO3 Notes:
0.5% HCl (Hg samples) Notes:
Refrigerate/Freeze Notes: Deep Loss B-2
Other Notes:
Completed By: Date/Time: 03/30/06 1/138

1215	Doker - Jak Cd.		INO:0'
i	Ots Carl	10 00 10/6/12	Market of Or No.
	Received By: Date/Time	13	-MA MCD or CT DCD3 Relinquighter By:
completely. Samples can not be logged in and turnaround time clock		Preservative A	IS YOUR PROJECT
Please print clearly, legibly and		Container Type A	PLEASE ANSWER QUESTIONS ABOVE!
		4 ×	2527. 4/8 GC-0RG-88-340-350 A
		×	4/7 GC-ORG-88-320-330
		× -	4/6 GC-0RG-88-300-310
		×	415 GC-ORG-88-280-290
		×	414 GC-026-88-260-270
		~	4/3 GC-ORG-88-240-250
		×	412 GC-026-88-220-230
		×	411 GC-0RG-88-200-210
		X	410 GC-026-88-180-190
		X 280 X	2527+ 409 GC-0R6-88-160-170 1/27/06 -
Sample Specific Comments		Time Matrix Initials	Date
(Please specify below)		Sample Sampler's	ALPHA Lab ID Collection
☐ Lab to do		<u> </u>	
Preservation 6	56	*	
Not needed . #	1	Newfields for INTO A	** Please contact Ted Healey @ New
// Filtration	To A	44	Other Project Specific Requirements/Comments/Detection Limits:
SAMPLE HANDLING T	(SIS	Time:	☐ These samples have been previously analyzed by Alpha Date Due:
		RUSH (only confirmed if pre-approved!)	101 601 0070 Standard
equired?	'es □ No Are MCP Analytical Methods Required?	□ Yes	$  \cdot  $
PRESUMPTIVE CERTAINTY CT REASONABLE CONFIDENCE PROTOCOLS	MAMCPPRESUMPTIVE CERTAINTY CTRE/	WA	,
			7
	State /Fed Program Criteria	State	
	Regulatory Requirements/Report Limits	Reg	Client: Newseas ENV Project #:
	□ ADEx □ Add'l Deliverables		Client Information Project Location:
☐ Same as Client info PO#:	O FAX O EMAIL		TEL: 508-898-9220 TEL: 508-822-9300 Project Name:
Billing Information	Report Information - Data Deliverables	en en en en en en en en en en en en en e	
ALPHA Job#:	Date Rec'd in Lab:	PAGE 1 OF 1 Dat	CHAIN OF CUSTODY
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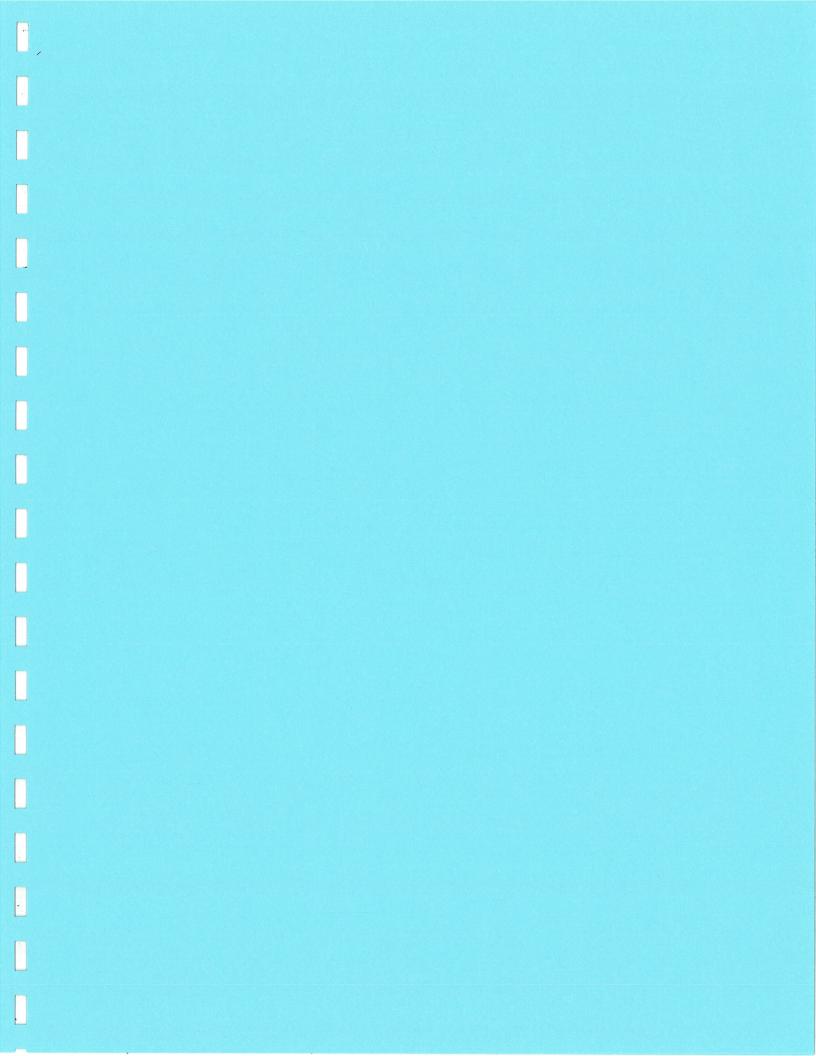
<b>N</b>	CHAIN OF CUSTODY	PAGE 1	OF Date	Date Rec'd in Lab:	АГРН	ALPHA Job #:
WESTBORO, MA RAYNHAM, MA	Project	Project Information	Report	ort Information - Data Deliverables		Billing Information
TEL: 508-898-9220 TEL: 508-822-9300 FAX: 508-898-9193 FAX: 508-822-3288	Project Name:	ame:	□FAX	AX 🗆 EMAIL	□ Same	☐ Same as Client info PO#:
Client Information	Project Location:	ocation:	□ A	☐ ADEx ☐ Add'l Deliverables	ables	
Client: NEWFIELDS 1	ENU. Project #:		Regulat	llatory Requirements/Report Limits	rt Limits	
Address: 100 Ledgewood Pl	み 凡 Suiz み配ject Manager:	lanager:	State	State /Fed Program	Criteria	
Rockland, Rut	1 7	Quote #:	MAMC	ICPPRESUMPTIVE CERTAINTY	NTYCTREASON	CTREASONABLE CONFIDENCE PROTOCOLS
18	x /09	Turn-Around Time	☐ Yes	□ No	Are MCP Analytical Methods Required?	?
Fax: 781-681-5048	O Standard	ard □ RUSH (only confirmed if pre-approved!)		□ No	Are CT RCP (Reasonable Confidence Protocols) Required?	Protocols) Required?
Email: Chealey Onewhelds Com						SAMPLE HANDLING T
$\cong$	uirements/Comments/De		ALY	The last		/ Filtration A
** Please contact	Ted Healey @ Newfields	de la	INTO AN	een.		eeded 7 0 do 9 do
ALPHA Lab ID	000000	Collection Sample	Sampler's			(Please specify below)
9527-119 GC-086	50-086-87-160-170	1/25/06 - SED	minals:			Sample Specific Comments S
420 GC-ORG	7-87-180-190		×			
421 GC-026	7-87-200-210		×			
422 GC-ORG-	- 87-220-230		×			
423 GC-0RG	-87-240-250		<b>×</b>			
424 GC-0RG	,-87-260-270		×			
2527.425 60-026-	-87-280-290	4	×			
PLEASE ANSWER QUESTIONS ABOVE	ABOVEI	Cont	Container Type A  Preservative A			Please print clearly, legibly and completely. Samples can not be
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MA MOT OF CI KOT!	CT! (Monny)	3/2/06	6 1330		- Annual Control of the Control of t	<ul> <li>resolved. All samples submitted are subject to Alpha's Payment Terms.</li> </ul>
FORM NO: 01-01 (rev. 10-0CT-05)				2 May	03/31/06 12	See reverse side.

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Central File #: 2527	Sample No(s): 426 - 435 Project Manager:	Burg her
	CT MANAGER (prior to arrival when possible)	
Matrix: Yes No	WP#	
	ect (requires high-level sample tracking procedures)	
Filter Samples:	Amount: Entire sample Half of sample	
<del>                                   </del>	ple(s) - samples will be weighed and placed in ultralow temp freezer	
Special instructi		(2007/ 100)
Sample Preservation Instruct		
Date To Archive:	Date To Dispose:	
TO BE COMPLETED UPON S	SAMPLE ARRIVAL/LOG-TN	
	in Appropriate Box	
	istody seal present?	
	custody seal intact?	<b>*</b> O
	ler(s) temperature(s) within acceptable range of 4±2°C or frozen? iple coolers, note temp. of each)	<u>2.9 °c</u> °c
	ect Manager notified of any custody/login discrepancies (cooler tem ent/Remedy:	p, sponsor codes, etc)?
Were all o	chain of custody forms signed and dated?	
Were san	mples filtered at MSL?	
polythia to the second		
Sample condition(s):	Acceptable Other (explain):	
Container type:	Teflon Poly Glass Spex Other:	
Notes:		
		<u> </u>
Completed By:	2 Mahr Date/Time: 05/16/00	5 1230
SAMPLE PRESERVATION		
Sample(s) were preserved	d at MSL	
Sample(s) were preserved	d prior to arrival at MSL (noted on CoC / Sample / per PM Instructi	on)
Random pH checked for ~	-10% of samples (use dip paper) Sample IDs:	
Complete pH check requir	red for project (use pH meter and record on pH Record form)	
If preservation necessary, reco	rd Acid Lot#	
Type: 0.2% HN03	Notes:	
0.5% HCl (Hg sam	nples) Notes:	
Refrigerate/Free	Notes: fridge lab 223	·
Other	Notes:	
Completed By:	Note/Time: Tropo	(2 = 2)
	July 11111e. 16/06	1400

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(rev. 12-4pni-06)	FORM NO: 01-01 Internal	MA MCP or CT RCP?	IS YOUR PROJECT		PLEASE ANSWER QUESTIONS ABOVE!	2527. 435 GC-ORG-31-330-340	1 437 GC-ORG-31-310-320	₩33 GC-ORG-31-290-300	W 732 GC-ORG-31-270-280	A GC-ORG-31-250-260	<b>130</b> GC-ORG-31-230-240	429 GC-ORG-31-210-220	428 GC-ORG-31-190-200	/ イ名子 GC-ORG-31-170-180	2527. 426 GC-ORG-31-150-160	(Lab Use Only)	ALPHA Lab ID Sample ID			Other Project Specific Requirements/Comments/Detection Limits:	These samples have been Previously analyzed by Alpha	Email:	Fax: 781-681-5048	Phone: 781-681-5040 ext	Rockland, MA 02370	Address: 100 Ledgewood place Suite 302	Client: Newfields Environmental	Client Information	FAX: 508-698-9193	Raynham, MA TEL: 508-822-9300	WOODS HOLE LABS	VI.	CHAIN OF CUSTODY
		Morre	Relin			1/28/06	1/28/06	1/28/06	1/28/06	1/28/06	1/28/06	1/28/06	1/28/06	1/28/06	1/28/06	Date Time	Collection			Detection Limits:	Due Date: Time:		Standard	Turn-Around Time	ALPHA Quote #:	Project Manager: Ted Healey	Project #:	Project Location:		Project Name:		Project Information	CUSTODY
		h	Relinquished By:	Preservative	Container Type	sed	sed	sed	sed	sed	sed	sed	sed	sed	sed	Matrix Initials	Sample Sampler's						Rush (ONLY IF PRE-APPROVED)			<sup>3</sup> Y					· · · · · · ·		PAGE 1 OF 1
	05/1/or to	5/15/00 1635	Date/Time	A .	G											,								ANALYSIS	☐ Yes	☐ Yes	MCP PRESU	State/Fed Program	Regulatory R	☐ ADEx	☐ FAX	Report Information	Date Rec'd in Lab:
		Ded Ex	Received By:	1	1																				☐ No Are CT RCP (R	☐ No Are MCP Analy	MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOL	7	Regulatory Requirements/Report Limits	☐ Add'l Deliverables		nation Data Deliverables	
	21 30/3/20 19		Date/Time	1																					Are CT RCP (Reasonable Confidence Protocols) Required?	Are MCP Analytical Methods Required?	REASONABLE CONFI	Спітепа			_	s Billing Information	ALPHA Job #:
Ç	submitted are subject to	start until any ambiguities ar resolved. All samples	not be logged in and turnaround time clock will no	Please print dearly, legibly and completely. Samples co	)											Sample Specific Comments			(Please specify below)	☐ Lab to do	☐ Lab to do	☐ Not Needed	Filtration	SAMPLE HANDLING	ols) Required?		DENCE PROTOCOL				PO #:		



Central File #: 2527 Sample No(s):	Project Manager: Sivale
TO BE COMPLETED BY PROJECT MANAGER (prior to	
Matrix: Sediment Yes No	WP# <u>4)76789</u>
Navy-type Project (requires high-level s	sample tracking procedures)
Filter Samples: Amount:	Entire sample Half of sample
Freeze dry sample(s) - samples will be w	veighed and placed in ultralow temp freezer (Lab# 130)
Special instructions:	
Sample Preservation Instructions:	
Date To Archive:	Date To Dispose: Hel Fins
TO BE COMPLETED UPON SAMPLE ARRIVAL/LO	OG-IN
Yes No N/A Indicate in Appropriate Box	
Was a custody seal present?	
Was the custody seal intact?	72.3
(if multiple coolers, note temp.	thin acceptable range of 4±2°C or frozen?
Was Project Managen notified of	any sustant de la significance and a significance a
Comment/Remedy: Sodim	cust for age-dating do not require refriger
Were an ending reasons forms	signed and dated? \(\mathbb{Z}\) \(\frac{7}{5}\)/06
Were samples filtered at MSL?	
Sample condition(s):	Other (explain):
Container type: Teflon Poly Glass	) Spex Other:
Notes:	
1 1	
Completed By: Single	Date/Time: 7/5/04 09/5
SAMPLE PRESERVATION	
Sample(s) were preserved at MSL	
Sample(s) were preserved prior to arrival at MSI	L (noted on CoC / Sample / per PM Instruction )
Random pH checked for ~10% of samples (use dip	p paper) Sample IDs:
Complete pH check required for project (use pH	meter and record on pH Record form)
If preservation necessary, record Acid Lot#	
Type: 0.2% HNO3 Notes:	
0.5% HCl (Hg samples) Notes:	
Refrigerate/Freeze Notes:	
Other Notes:	
Completed By:	Date/Time:

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Raynham, MA	LABS	<u>ک</u>	;	C

## CHAIN OF CUSTODY

**Project Information** 

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State/Fed Program	Criteria
MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS	ASONABLE CONFIDENCE PROTOCOLS

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		Confidence Protocols) Required?
Filtration	SAMPLE HANDLING	) Required?

	Pre			
Lab to do	Preservation '	Lab to do	Not Needed	Done

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2527-436

Sample Specific Comments

ALPHA Lab ID

Sample ID

Date

Time

Matrix Sample

Sampler's Initials

**RADIONUCLIDE** 

Collection

(Lab Use Only)

Other Project Specific Requirements/Comments/Detection Limits:

☐ These samples have been Previously analyzed by Alpha

Due Date:

Time:

Email: smattingly@newfields.com

Phone: 781-681-5040 ext 103

Turn-Around Time

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Rush (ONLY IF PRE-APPROVED)

Rockland, MA 02370

Address: 100 Ledgewood Place, Suite 302

Client: Newfields Environmental

Project #:

Project Manager:

ALPHA Quote #:

Project Location:

Client Information FAX: 508-898-9193 TEL: 508-898-9220

FAX: 508-822-3288 TEL: 508-822-9300

FAX: 603-628-2241 TEL: 603-232-8247 Bedford, NH

Project Name: GOWANUS CANAL

Fax: 781-681-5048

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PLEASE ANSWER QUESTIONS ABOVE!

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FORM NO: 01-01 Internal (rev. 12 April-05)

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Client Information	FAX: 508-898-9193	TEL: 508-898-9220	Westborough, MA	ICT V
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508-898-9193 FAX: 508-822-3288	FAX: 508-822-3288 FAX: 603-628-2241	
nt Information		Project   ocation:
nt· Newfields Environmental		Project #:
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Fax: 781-681-5048

Phone: 781-681-5040 ext 103

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Rush (ONLY IF PRE-APPROVED)

ALPHA Quote #:

☐ Yes **ANALYSIS** 

Are CT RCP (Reasonable Confidence Protocols) Required?

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SAMPLE HANDLING Filtration

Rockland, MA 02370

Address: 100 Ledgewood Place, Suite 302

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## **CHAIN OF CUSTODY**

PAGE, 2, OF 3

PLEASE ANSWER QUESTIONS ABOVE! MA MCP FORM NO: 01-01 interna (rev. 12-April-06) ALPHA Lab ID S YOUR PROJECT Other Project Specific Requirements/Comments/Detection Limits: Email: smattingly@newfields.com Fax: 781-681-5048 Phone: 781-681-5040 ext 103 Client Information Rockland, MA 02370 Address: 100 Ledgewood Place, Suite 302 Client: Newfields Environmenta TEL: 508-898-9220 Westborough, MA These samples have been Previously analyzed by Alpha FAX: 508-898-9193 (Lab Use Only) Raynham, MA or CT RCP? FAX: 508-822-3288 FAX: 603-628-2241 TEL: 508-822-9300 GC-ORG-21-150-160 GC-ORG-01-320-328 GC-ORG-01-310-320 Sample ID TEL: 603-232-8247 Bedford, NH Project Manager Project Name: GOWANUS CANAL Project Information Due Date: Standard
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